

Chapter 9 - Environmental Analysis of the Exeland-Owen-Weston Routes- Existing Conditions and Potential Impacts

Physical Overview of the Routes and Substation Modifications Proposed

Geography

Topography – Owen 1, 2, 3, and 4

Most of the area crossed by the Owen routes, except for Clark County, is located in the Northern Highland area. This area was once (600 to 700 million years ago) as mountainous as the Alps. These peaks were gradually worn down until nothing remained but a peneplain, a low undulating plain with occasional hills. The Northern Highland is one of the few places where these old mountain remnants are near the surface. The majority of the Northern Highland region is a smooth upland where few rocks punctuate the surface. An indication of the flat nature of the topography is the straight lines of the railroad corridors. This straight course is made possible by the low relief of the peneplain. The land generally slopes to the south, but usually no more than 4 to 5 feet per mile.

The Northern Highland also contains several types of ridges. The most visible are the monadnocks, which consist of rock of superior hardness or resistance to erosion. There are several well-known monadnock ridges. Rib Mountain, located north of the Weston terminus of the routes, is one of them.

The Northern Highland covers a large portion of northern Wisconsin and contains the areas of highest elevation in the state. This region, on the whole, has been profoundly affected by the glacial occupation. The soil, in general, is stony and sandy. This results in vast areas that are better suited to forest than crop production. This is especially true because of the numerous large swampy areas. The lakes are a steady source of water for the rivers that flow from this

highest part of the state, as well as an attraction to fishermen and summer visitors. The rivers, which were important waterways for the ancient and recent native peoples and the early white explorers, are still important to the tourist trade.

In much of Clark County, the Owen routes cross the Central Plain area. The Central Plain is an inner lowland with a floor of weak Cambrian sandstone. The general slope is very gradual, about 4 feet per mile. There are some swamps in the Central Plain because the glaciers frequently deposited some clayey moraine material over the otherwise permeable sandstone.

Geology – Owen 1, 2, 3, and 4

Some of the oldest rock in the world is near the surface in northern Wisconsin. This bedrock is part of the “shield” rock of the North American landmass. Each present continent contains at least one such core or shield that appears near the surface over wide areas. These shields were so named because they tend to bulge up toward the center like a medieval battle shield. The shield in North America is often called the Canadian Shield because it covers the eastern two-thirds of Canada. It also extends into the northern third of Wisconsin. This shield was formed during the early genesis of the earth up to about 600 million years ago. The Lake Superior Lowland and the Northern Highland provinces cover the portion of the shield in Wisconsin.

The Arrowhead-Weston project is located, almost entirely, on this high part of the shield in northern Wisconsin. The down sloping edge of this ancient rock shield also lies under the southern two-thirds of Wisconsin but is buried under hundreds of feet of younger rocks. These younger rocks lying over the shield form the bedrock of southern Wisconsin. The depth of the shield rock in southern Wisconsin is evident in many places. Some river valleys in southern Wisconsin have been cut deep enough to expose the shield, in some locations it has been encountered during well borings, and the summit of some hills in the Baraboo Hills region show the shield rock emerging through the covering of younger rock.

Over time, wind, rain, and rivers smoothed the surface of the shield in northern Wisconsin. Then, for 200 million years, vast inland seas deposited sediments in overlapping layers as they retreated and advanced several times. Almost all of the sediments deposited in northern Wisconsin were subsequently weathered away, exposing the shield bedrock again. During the last 2 to 3 million years northern Wisconsin was assaulted with glaciers that knocked down forests, erased rivers, scraped and ground up the surface of the land. After four separate advances of glaciers, over thousands of years, the ice melted back, pouring out floods of melt water, dumping its waste rock over the terrain and leaving the barren land to restore itself. The ice left its mark in northern Wisconsin, so vividly and in so many ways, that this state is renowned as a repository of glacial features and is a textbook of glacial history. As a result of all this more recent geologic activity in northern Wisconsin, the bedrock is generally covered by varying depths of glacial deposits.

The Central Plain is an inner lowland with a floor of weak Cambrian sandstone. These Cambrian sandstone lowlands are present in most portions of Clark County through which the Owen routes pass. The Central Plain was denuded by glaciers because it is underlain by

relatively weak rock. Thus, this area is very flat. Central Marathon County, where the project terminates, is part of the Driftless Area.

Important geologic formations of varying age at many places in the state have been described. Because of the significance of these formations and what they have revealed and continue to reveal through geologic research, these formations need to be preserved. Of the formations described, none would be affected by the proposed routes in the Owen sectors.

The Owen 2 and 3 Routes pass near the recently closed Flambeau Mining Company mine located south of Ladysmith. Copper, zinc, silver, and gold were extracted from this mine. There may also be other deposits of metallic ores located along the Owen routes.

Soils – Owen 1, 2, 3, and 4

Origins and associations

Most of the land that would be affected by the proposed project is located in the Northern Highland geological province of Wisconsin. Glaciers in this region have stripped sediments from the area and deposited glacial till over the hard rock that was resistant to glaciation. Soils here tend to be stonier and sandier than those in the rest of the state and there are large areas of wetlands. There is little lime in the glacial drift of the Northern Highland, so the water from wells and springs is predominantly soft. Glaciers did not cover the central and south-central parts of Marathon County; these areas are part of the Driftless Region.

Sawyer County:²²⁷ In Sawyer County, the Owen routes are mainly on silts or silt loams. These soils are primarily included in two soil associations. The Santiago-Freer-Freeon-Amery association has nearly level to moderately steep soils on glacial till plains and uplands. These soils formed in 15 to 36 inches of silt (loess) over a firm reddish-brown sandy loam to loam glacial till. The Antigo-Brill-Stambaugh association has nearly level to gently sloping soils on glacial outwash plains and stream terraces. These soils formed in 20 to 40 inches of silty material over loose sands and gravel. Prime farmland soils are more concentrated in the southern portion of the county.

Rusk County:²²⁸ Most of the soils in Rusk County that are found in the proposed project area are forested silty soils. The towns of Marshall and Murry appear to have the highest concentration of prime farmland of any of the towns in the county that could be affected by the proposed project. The Owen 1, 2, 3, and 4 Routes are located in agricultural areas. Many of the

²²⁷ *Sawyer County Farmland Preservation Plan*, Sawyer County Zoning Committee, Northwest Regional Planning Commission, May, 1982, pp. 12-14; Sawyer County Conservation Department; Sawyer County University Extension; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March, 1996.

²²⁸ Rusk County USDA Natural Resources Conservation Service; Rusk County USDA Farm Service Agency; *Soil Regions of Wisconsin, Map*, Wisconsin Geological and Natural History Survey, 1993; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March 1996.

soils on these routes are classified as prime farmland. Segments 239, 240, and 242 pass through significant amounts of agricultural land.

Chippewa County:²²⁹ Soils in the affected area of Chippewa County are included in the Spencer-Magnor-Almena soil association. These soils are deep, nearly level to sloping, moderately well drained to somewhat poorly drained silty soils. They are found on moraines. All of the potential segments pass through significant amounts of Almena silt loam with 1 to 6 percent slopes. This soil has high available water capacity and moderate organic-matter content. The surface layer is friable and can be easily tilled, but it tends to crust and puddle after hard rains or if tilled when wet. This soil is prime farmland. Segments 236, 237, and 239 also pass through significant amounts of Auburndale silt loam with 0 to 2 percent slopes. The available water capacity of this soil is high and the organic-matter content is high to very high. A seasonal high water table, which is near or above the surface in undrained areas, limits the rooting depth of most plants. Segment 237 also passes through significant amounts of Spencer silt loam with 2 to 6 percent slopes and Amery sandy loam with 6 to 12 percent slopes. The Spencer soil is also considered prime farmland. Segment 239 mainly passes through Barronett silt loam with 0 to 2 percent slopes.

Clark County:²³⁰ The soils present along the proposed routes in Clark County are silt loams, especially Loyal and Withee silt loams. All of the routes in Clark County would affect prime farmland.

Taylor County:²³¹ The soils present along the routes in Taylor County include Magnor silt loam, Freeon, Almina, Sconsin, Maplehurst, and Newood soils. Prime farmland tends to be concentrated in the silty soils of the northwest and southeast areas of the county with less productive loamy soils concentrated in a band from the southwest to the northeast part of the county.

Marathon County:²³² All of the potential routes in Marathon County begin at the Weston Substation and pass through a number of different soil types north and west of the substation. The Withee-Marshfield association is a deep, nearly level to gently sloping silty soil that is somewhat poorly drained to poorly drained. Many of the better drained areas of this soil are used as croplands while wetter areas are wooded or used as unimproved pasture. The eight

²²⁹ *Soil Survey of Chippewa County*, USDA Soil Conservation Service in cooperation with the Research Division of the College of Agricultural and Life Sciences, University of Wisconsin, June, 1989, sheet 9, pp. 15-17, 24-26, and 94.

²³⁰ Clark County USDA Natural Resources Conservation Service and Clark County University Extension.

²³¹ Taylor County Service Center; *Soil Regions of Wisconsin, Map*, Wisconsin Geological and Natural History Survey, 1993; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March, 1996.

²³² *Soil Survey of Marathon County*, USDA Soil Conservation Service in cooperation with the Research Division of the College of Agricultural and Life Sciences, University of Wisconsin, September 1989, pp 7-17.

miles of Marathon-Mylrea-Moberg soils are well-drained to somewhat excessively drained stony, gravelly, and silty soils. This association is found on uplands and ground moraines, and sandy or loamy glacial till. The Fenwood-Rietbrock-Rozellville association is also commonly found along the routes. This soil association has deep, nearly level to steep, well drained to somewhat poorly drained, stony and silty soils. This association is found on ground moraines and bedrock-controlled uplands, and sandy or loamy glacial till, residuum, or bedrock underlies the soils. Many of the less sloping and nonstony areas in this association are used as cropland. The more sloping or stony areas are used as woodland. Erosion is the main hazard in most areas used for cropland, and in some areas, stoniness is the main limitation. The Rietbrock soils are also limited by wetness on slopes of less than two percent. Most of this association is suited to cultivated crops and to trees.

Vegetative cover – Owen 1, 2, 3, and 4

The northern half of the Owen sector, from Exeland to the Clark-Taylor County line, is quite similar in vegetative cover to the southern portion of the Oliver Sector. Numerous forested and shrub/scrub wetlands are present in low-lying areas between Exeland and Ladysmith. Uplands primarily support forests dominated by northern hardwoods and aspen, with scattered conifers. Continuing further south, the upland landscape grades into a mixture of forest and agriculture.

South of the Taylor-Clark County line and east toward Wausau, the landscape is much more open. Most of the remaining forest land lies adjacent to the large number of creeks and rivers that flow through the area. Dairy farms replace beef cattle as the dominant agricultural operation and widespread production of row crops, including corn and soybeans, is present.

Owen 1 Route

Detailed description

The Owen 1 Route is 122 miles long. Figures 9-1 to 9-3 show the route from the north to south. The route begins about three miles south of Exeland, in Rusk County, at an existing 69 kV transmission line. The route follows the transmission line north for about three miles. It then extends southeast, passing south of Exeland, crossing the Wisconsin Central Railroad. The route turns south to meet the rail line. The route continues southeast along the east side of the railroad ROW for approximately three miles. Just north of the Chippewa River the route crosses to the west side of the railroad and continues southeast for another 1.5 miles. In this distance the route crosses the Sawyer-Rusk County line, Little Weirgor Creek, STH 40, and the Chippewa River.

The route then turns eastward, and proceeds cross-country for about 11 miles, crossing Bear Creek, CTH J, the Little Thornapple River, STH 27, Skunk Creek, the Thornapple River, CTH J, and Crooked Creek. The route crosses the Flambeau River just south of the Big Falls Dam. It then follows an existing NSP 115 kV line east for a mile, crossing CTH X. The length along the existing line would be rebuilt as double circuit line.

At this point the route joins a second existing NSP 115 kV transmission line that heads north and south. Turning south, the route would follow this transmission line for about 18 miles. The existing line crosses USH 8 approximately two miles east of Tony and many creeks and rivers, including the Jump River.

The route extends southeast about 25 miles, along the Wisconsin Central Railroad, leaving the railroad to detour around Donald, Gilman, and Lublin. The route enters Taylor County just southeast of Sheldon for a brief distance before crossing into Clark County, southeast of Lublin. A four-mile stretch west of Lublin follows the Lakehead petroleum pipeline. Fisher River, CTH M, CTH H, STH 64, the Yellow River, CTH B, Hay Creek, STH 73, CTH F, the North Fork Eau Claire River, CTH A, and the Black River are crossed by this section of the route.

About three miles northwest of Owen, the route heads eastward, cross-country for about 21 miles, crossing CTH T, Brick Creek, CTH D, the North Fork Popple River, and CTH E as it passes north of Sportsman Lake. The route crosses STH 13 and enters Marathon County halfway between Abbotsford and Dorchester. In Marathon County this section crosses the West and East Branches of the Big Eau Pleine River and CTH F before turning south and heading three miles south, crossing STH 29, and intersecting with an existing WPSC 115 kV transmission line that runs east and west 0.75 mile south of STH 29.

The route turns east and extends eight miles, following a WPSC 115 kV line for approximately seven miles, crossing Randall Creek, CTH E, Hamann Creek, STH 97, Brod Creek, Fenwood Creek, and CTH M. Where the existing line angles to the northeast (about four miles west of Edgar), the route continues due east for another 1.5 miles. A quarter mile east of CTH M the route turns southeast and continues for four miles, crossing CTH N. South of Edgar the route turns, proceeding east about 11 miles, crossing CTH H, CTH S, STH 107, CTH B, Fourmile Creek, and CTH O. A half-mile east of CTH O the route turns and heads south for two miles, again crossing Fourmile Creek. The route then turns east and southeast about a mile to Spring Brook Road and a petroleum pipeline corridor. These facilities are followed for about a mile until the route joins an existing WPSC 345 kV transmission line. The new line would be double circuited with the 345 kV line across the Fourmile Creek and Wisconsin River to the Weston Substation.

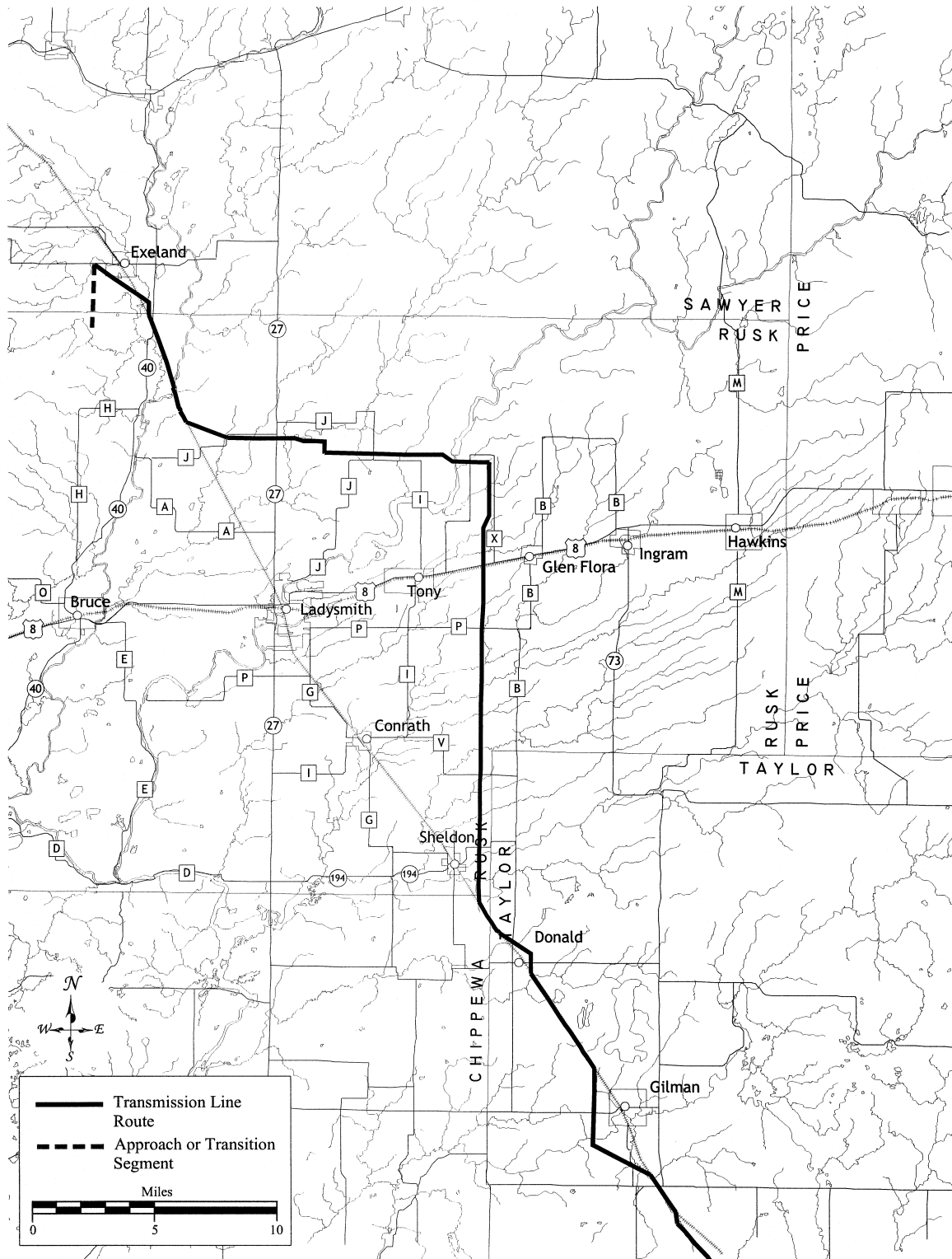
Figure 9-1 Owen 1 Route (1 of 3)

Figure 9-2 Owen 1 Route (2 of 3)

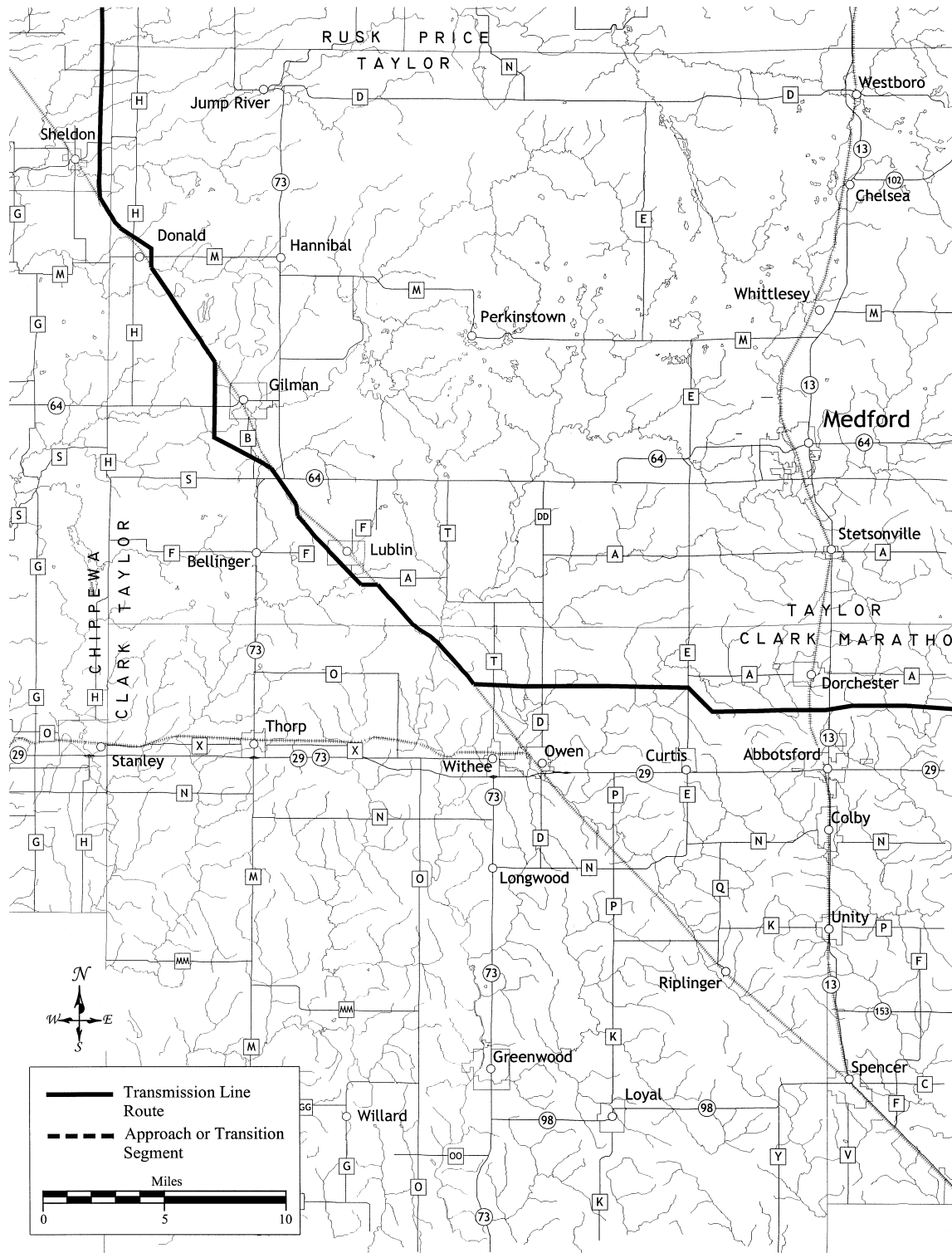
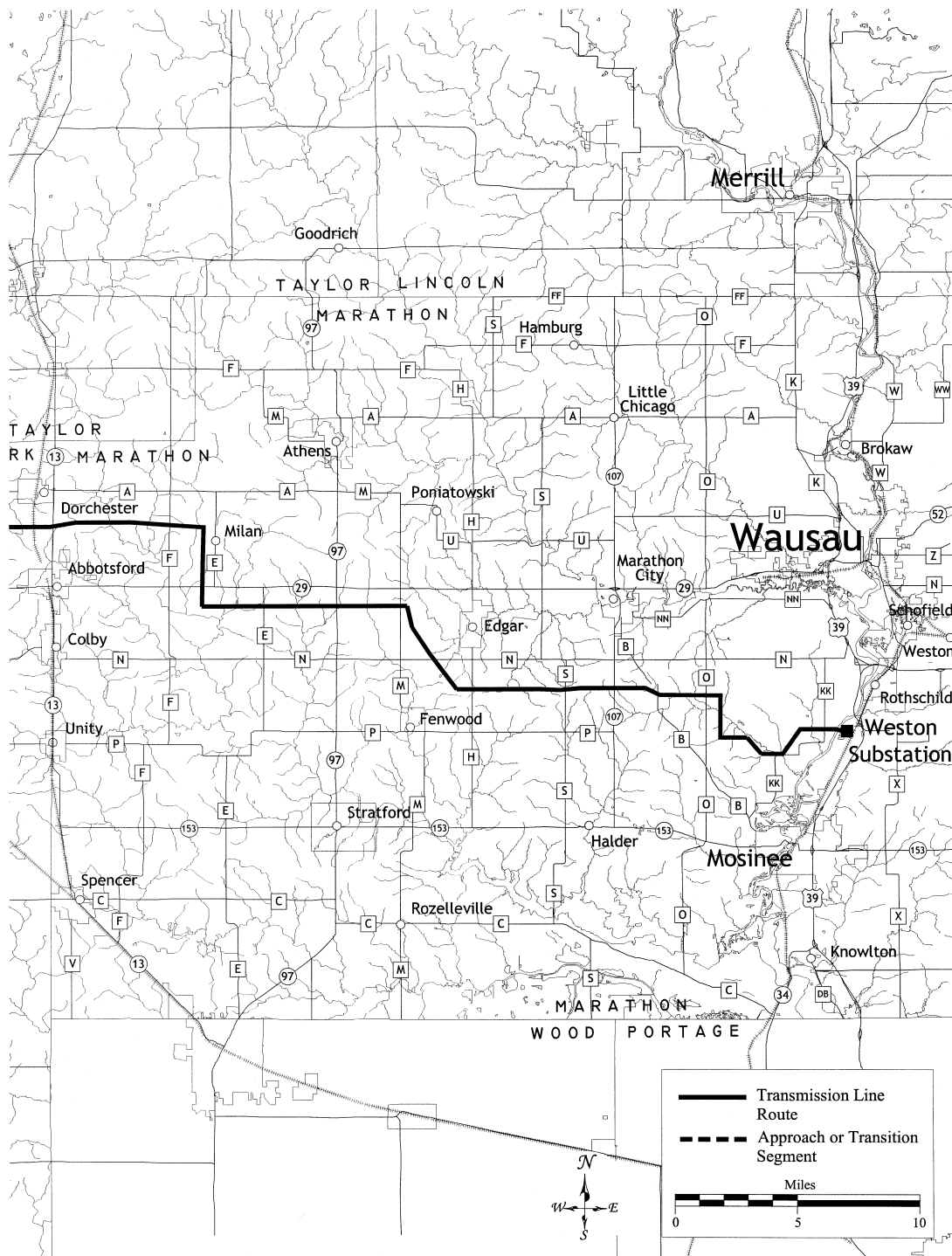


Figure 9-3 Owen 1 Route (3 of 3)



Natural resources

Lakes

There are no lakes over 20 acres in size within 1,000 feet of the Owen 1 Route.

Rivers and streams

There are 57 river/stream crossings on the Owen 1 Route. Eight of the crossings are over waterways that have been designated as either OERW²³³ and 11 of the crossings are over waterways classified as trout streams by the DNR. Thirty-five of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the transmission line, but they are not included in this analysis.

Table 9-1 indicates which streams along the Owen 1 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the stream habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

²³³ The DNR maintains a list of outstanding and exceptional resource waters of the state. Outstanding Resource Waters (ORW) include all national and state wild and scenic rivers. ORW are defined as a lake or stream having excellent water quality, high recreational and aesthetic value, high quality fishing and free from point source or non-point source pollution. Exceptional Resource Waters (ERW) are similar to ORW in terms of water quality, recreational and aesthetic value and wildlife habitat but may be susceptible to future point source pollution. Both Outstanding and Exceptional Resource Waters (OERW) provide unique environmental settings that have not been significantly affected by human activities. The designated streams are identified in the state administrative code.

Table 9-1 Rivers and streams on the Owen 1 Route (from north to south)

| | | |
|-----------------------------|-----------------------------|-------------------------------------|
| Little Weirgor Creek * ** τ | Alder Creek ** | West Branch Big Eau Pleine River |
| Chippewa River | Jump River * | East Branch Big Eau Pleine River ** |
| Bear Creek ** | Shoulder Creek | Randall Creek ** |
| Little Thornapple River ** | Unnamed stream ** | Hamann Creek |
| Skunk Creek ** | Fisher River ** | Brod Creek |
| Thornapple River ** | Yellow River | Fenwood Creek |
| Unnamed stream ** | Hay Creek ** | Fourmile Creek * ** τ |
| Crooked Creek | Hay Creek ** | Fourmile Creek * ** τ |
| Flambeau River | North Fork Eau Claire River | Fourmile Creek * ** τ |
| Unnamed stream | Black River | Fourmile Creek * ** τ |
| Josie Creek ** τ | Unnamed stream ** | Fourmile Creek * ** τ |
| Deer Tail Creek ** | Unnamed stream | Fourmile Creek * τ |
| Unnamed stream ** | Brick Creek ** | Unnamed stream |
| Main Creek ** | Unnamed stream ** | Fourmile Creek ** τ |
| South Fork Main Creek ** | Unnamed stream | Unnamed stream ** |
| Skunk Creek ** | North Fork Popple River | Unnamed stream ** |
| Little Jump River ** | Unnamed stream | Fourmile Creek τ |
| Unnamed stream ** | North Fork Popple River | Black Creek ** τ |
| Unnamed stream ** | North Fork Popple River | Wisconsin River ** |

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed or another stream or wetland.

τ Classified a trout stream.

Shading Indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing.

The following section describes specific river and stream crossings on the Owen 1 Route and the potential impacts of constructing the line in these areas.

Chippewa River

The Chippewa River crossing for Segment 305 is adjacent to a railroad bridge. The riverbanks are steep and wooded at this location. The impact of this crossing is reduced due to the imposing presence of the railroad bridge. Boaters would be the principal group impacted.

Flambeau River

A canoe portage is located at NSP's Big Falls Dam on the Flambeau River. Two existing electric transmission lines cross the river just south of the dam. The proposed segment 144 river crossing is about 800 feet south of the existing transmission line crossings. The riverbank is steeply sloped and wooded at the proposed crossing. This crossing would be visible to canoeists on the Flambeau River traveling south of the dam. The visual impact could be reduced somewhat if the crossing were moved further north to lie directly adjacent to the existing transmission line crossings.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345-kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Fourmile Creek

Segment 14b would cross Fourmile Creek in Marathon County five or more times within a distance of two miles. A portion of the stream flows within the transmission line ROW, parallel to the proposed centerline, maximizing impacts to the stream from construction and ROW maintenance. This stretch of the stream is classified as an ERW.

Other Outstanding and Exceptional Resource Waters (OERW)

The route crosses the Jump River south of Sheldon (segment 243). This river is classified as an “Exceptional Resource Water.” Segment 309 crosses Little Weirgor Creek, an ORW, south of Exeland.

Nationwide Rivers Inventory (NRI)

The Owen 1 route would cross four river segments listed in the NRI. They are the Chippewa River (segment 305), the Thornapple River (segment 145b1), the Jump River (segment 243), and the Wisconsin River (segment 1a). The first three rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through a stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or

constructing a bridge or road.²³⁴ For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Wetlands

Construction of the transmission line can damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times. Heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in these wetlands. The excavation and heavy equipment required to pour footings and erect the structure would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be

²³⁴ Use of private roads or logging roads is possible, if arrangements can be made with the owner. Some incremental impact is likely to occur since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

necessary for equipment to drive through one or more wetlands, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW would require the clearing of brush or timber over a distance of up to a mile or more, rendering such access impractical. A wetland over 1,000 feet in width would necessarily require driving equipment in the wetland, due to the need to place one or more structures.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Owen 1 Route would cross many wetlands as it passes from Exeland to Weston. The majority of wetlands is in the forested or shrub/scrub categories. The emergent-type wetlands, which constitute the remainder of the wetlands, are more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 25 wetlands are greater than 1,000 feet wide at the point where the Owen 1 Route crosses them and would require one or more structures to be placed within them.²³⁵ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 129 wetlands on the Owen 1 Route would be at risk of being driven through by construction equipment.

In general, wetlands are more common and less accessible between Exeland and Gilman than between Gilman and Weston. Segments 243 and 236 northwest of Gilman and 145b about six miles north of Ladysmith cross a large number of wetlands. The relatively high road density in Marathon, Clark, and southern Taylor Counties provides improved ROW access opportunities, reducing the probability of wetlands impacts. Much of the route follows existing railroad and electric transmission line corridors. The wetland impacts along these portions of the route would be incremental in nature since the existing facilities have likely caused some degradation of wetlands already.

Sensitive wetland types

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs

²³⁵ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structure represents a “best case scenario.”

(i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Owen 1 Route has a 700-foot crossing of a tamarack/spruce bog on segment 144 in Rusk County, near the Flambeau River.

The Owen 1 Route passes through two ericaceous bogs for a total crossing distance of 800 feet. These bogs are located on segments 309 and 310. Segment 310 has an existing transmission line.

High quality wetland resources

Five wetland (forested and non-forested) areas on the Owen 1 Route are associated with OERW, trout streams, or state wildlife areas:

- Emergent/wet meadow wetlands associated with Little Weirgor Creek, an ORW (segment 307, new corridor).
- Scrub/shrub wetlands associated with Josie Creek, a trout stream (segment 243, existing transmission corridor).
- Scrub/shrub wetlands in the Pershing State Wildlife Area (segment 236, railroad corridor) .
- A complex of wetlands southeast of Edgar associated with Fourmile Creek, an ERW and trout stream (segments 14b and 7a, mostly new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 9-2 Wetland resources affected by the Owen 1 Route

| | Length of Forested Wetland Crossed (miles) | Length of Non-Forested Wetland Crossed (miles) | Total Length of Wetland Crossed (miles) | Total Area of Wetland Affected (acres) |
|----------------|--|--|---|--|
| Double circuit | 7.6 | 16.2 | 23.8 | 397 |
| Parallel | 8.3 | 16.1 | 24.4 | 400 |

Forests

Upland forests found along the Owen 1 Route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120- to 150 foot-wide ROW would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120- to 150-foot-wide ROW through 23.4 miles of forest. If the new transmission line is built as a double circuit with the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROWs would require a total of 484 acres of ROW clearing in upland forest and 116 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 110 acres of cleared upland forest and 18 acres of cleared forested wetland.

If the new transmission line is built parallel to the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROWs would require a total of 580 acres of ROW clearing in upland forest and 134 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 22 acres of cleared upland forest and seven acres of cleared forested wetland.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts of forest clearing throughout the project area include degradation of woodland quality due to encroachment of weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

Table 9-3 Forest impacts for the Owen 1 Route

| | Double Circuit | Parallel Construction |
|--|----------------|-----------------------|
| Total new forest crossed (miles)* | 23.4 | 23.4 |
| Upland forest cleared (acres) | 484 | 580 |
| Wetland forest cleared (acres) | 116 | 134 |
| Total forest cleared (acres) | 600 | 714 |

* No corridor currently exists of any kind.

Forest fragmentation

An analysis of the forest fragmentation potential for the Owen 1 Route was completed as described in Chapter 6. Only two forest blocks greater than 1,000 acres in size are present along the Owen 1 Route due to the prevalence of agricultural land use throughout much of this

portion of the project area. The route would create a new corridor through these blocks. The first block is located in north central Rusk County (segments 145b1, 145b3, and 145a). The second is in a planned expansion area for the Nine Mile Unit of the Marathon County Forest (segments 14b and 49).

A similar analysis was conducted for the final EIS using a forest block size of 200 to 1,000 acres. In the more open landscape encountered along this route, a wooded block of 200 acres or more can provide a haven for many less common wildlife and plant species. Fragmentation of these areas could have a major effect on the potential for these species to thrive and reproduce in this area of the state. At least 16 forest blocks of this size have been identified on the Owen 1 Route.²³⁶ Ten of these blocks would be fragmented by the creation of a new corridor. In the other six blocks, the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Owen 1 Route could pass through up to 1.5 miles of forest owned by forest products industries (industrial forest). This industrial forest is located in Rusk and Taylor Counties.

County forest land

Marathon County Forest

Near the Weston Power Plant the Owen 1 Route crosses the Nine Mile Unit of the Marathon County Forest (Nine Mile Forest). This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segment 7a parallels Spring Brook Road and a petroleum pipeline and may share these corridors, reducing the incremental impacts. About 1.9 miles of the route cross county forestland. For over half this length, the new line would be double circuited with the existing WPSC 345 kV line. In addition, about 1.4 miles of the route cross an area southwest of the Nine-Mile Forest that is within the potential purchase zone for expansion of this county forest unit.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a

²³⁶ These blocks are mutually exclusive of the 1,0000+ acre blocks and thus have not been double counted for this analysis.

physical hazard to birds flying near the transmission line. Some potential impacts specific to the Owen 1 Route are described below.

The Owen 1 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment does not enter the rivers and if proper erosion control measures are implemented.

Bird collisions with the proposed line would be a concern at several locations along this route. One location would be at the Pershing Wildlife Area north of Gilman in Taylor County. This wildlife area is managed to promote waterfowl use and production. The Owen 1 Route crosses the western edge of the wildlife area. Waterfowl flying between the wildlife area and any wetlands to the west would risk colliding with the line.

Bird strikes are also a concern where the line would span major rivers like the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use these areas and have been observed in several locations along the route. Major rivers also can serve as corridors for daily and migratory flights by many bird species.

Segment 203 in Clark County, a long east-west segment north of Abbotsford and the Owen-Withee area, passes within a mile of several prairie chicken booming grounds. The greater prairie chicken is listed as a threatened species in Wisconsin. The line could pose a collision hazard to prairie chickens.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been observed in two different locations along the route (segments 1 and 243). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 9-4 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 9-4 Threatened and endangered species on the Owen 1 Route

| Scientific Name | Common Name | Status |
|---------------------------------|---------------------------|--------|
| <i>Clemmys insculpta</i> | Wood turtle | THR |
| <i>Cyclonaias tuberculata</i> | Purple wartyback mussel | END |
| <i>Plethobasus cyphus</i> | Bullhead mussel | END |
| <i>Ophiogomphus bowei</i> | Pygmy snaketail dragonfly | THR |
| <i>Tympanuchus cupido</i> | Greater prairie-chicken | THR |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | SC/FL |

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

Two parts of the route are in commercial/industrial zones. One is the Weston Power Plant site. The other is located near the Chippewa River, southeast of Exeland. Conservancy/recreational is the zoning designation along 2.6 miles of the route. Agricultural is by far the most common land use zoning designation along the proposed route, with 51.0 miles of the route crossing land zoned for agriculture. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity areas of use (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 3.8 miles of the route passes through areas zoned for residential use. About 1.6 miles of this lie along existing transmission line corridors. The majority of the residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. The other residentially zoned area is a 0.1-mile section of the route near Exeland, in Sawyer County. The proposed transmission line could discourage the siting of new homes within close proximity to the line or constrain the layout of residential lots. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed by each route segment noted. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forest lands are discussed in more detail under the Forest Impacts section of this chapter. The properties crossed are listed in the order they are crossed, north to south.

| | |
|--|---------------------|
| • Village of Exeland | Segment 309 |
| • Town of Dewey | Segment 243 |
| • Town of Pershing | Segment 236 |
| • DNR | Segment 236 |
| • DNR | Segment 236 |
| • Town of Hixon | Segment 221' |
| • Clark County Highway Department | Segment 221' |
| • Clark Co. Soil & Water Conservation District | Segment 203 |
| • Town of Mayville | Segment 203 |
| • Marathon County Forest | Segments 7a, 1b, 1a |
| • Rib Mountain Metro Sewage District | Segment 1a |

Agriculture

The route crosses a total of about 57 miles of agricultural land (46 percent of the total length of the route). Agricultural activity is less common at the beginning of the route in parts of the Sawyer and Rusk Counties and at the termination point in Marathon County near the Weston Power Plant. These locations are heavily forested. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. In Clark, Taylor, Chippewa, and Rusk Counties, the route would affect agricultural land used for dairy, beef, and Christmas tree production as well as smaller amounts of forested land.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Owen 1 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on what facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 to 45 feet taller than the

existing poles, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Owen 1 Route would be in those areas that do not have existing facility corridors. About 59 percent of the length of the route (73.6 miles) does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW where none currently exists. Most of this is located on farmland between Owen and Weston and on wooded land north of Ladysmith.

An increased level of visual impact would occur on the portions of the Owen 1 Route where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical facilities are present. Because the pipeline companies may not allow transmission line structures on or overhanging the existing pipeline ROW, it would be necessary to widen the cleared corridor 108 to 132 feet. The new, wider corridor would contain the very visible transmission line. About 3 percent, or 3.9 miles, of the proposed Owen 1 Route is located in a corridor containing only an existing pipeline. This segment is located near Lublin. Another 0.8 mile of the route near Weston would be adjacent to a road and a pipeline.

About 15 percent, or 18.7 miles, of the Owen 1 Route is along corridors that have an existing railroad line. Because the railroad company may not allow transmission line structures on or overhanging the existing railroad ROW, the existing corridors would be widened by 98 to 122 feet. Railroad facilities are generally more visible than a pipeline corridor, but the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact would be less than at existing pipeline corridors, but more than at existing transmission line corridors. Nearly five miles of the route parallel a railroad corridor in Rusk County, north of Ladysmith, and about 14 miles parallel a railroad corridor between Sheldon and Owen.

The remaining 25 percent, about 31.6 miles, of the Owen 1 Route would be located along existing electric transmission lines. About three miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole, double circuit structures that would be 125 to 135 feet tall. The other transmission line corridors to be shared with the proposed line are 115 kV lines. One is a 7.2-mile WPSC singlepole line between Abbotsford and Edgar constructed for 161 kV and operated at 115 kV. The remaining corridor involves 18.8 miles of NSP H-frame line between Sheldon and the Big Falls Dam on the Flambeau River. These existing lines are 70 to 100 feet tall. If the line is built as double circuit with the 115 kV lines, the existing WPSC corridor would only need to be widened about 40 feet. The NSP corridor would not need to be widened. The new poles would be 125 to 135 feet tall, with corner structures as tall as 160 feet. If the new line is built parallel to the existing 115 kV lines, the ROW would be expanded by 75 to 110 feet, and the second set of poles would be 85 to 105 feet tall with corner poles 100 to 130 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the NSP 69 kV line north of Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at some locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. North of Ladysmith and near the Weston Power Plant the landscape is heavily forested. Elsewhere the landscape is more open, with farmland predominating. In general, the southern part of the route is more densely populated than the rest of the route.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Owen 1 Route crosses the Chippewa and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

The Ice Age NST is proposed to extend through Taylor County, crossing the Owen 1 Route in the vicinity of segment 229. An exact location for the future trail has not been determined, but it is anticipated that it would cross the proposed power line route between Gilman and Lublin. The area contains much open land, and the power line would be highly visible from the trail, detracting from the aesthetic experience of trail users.

The Nine-Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segment 7a parallels Spring Brook Road and a petroleum pipeline corridor, reducing the incremental visual impacts.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetic and property values, the structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of structures within 300 feet on the Owen 1 Route with the number on other Owen Routes.

Table 9-5 Number of facilities within 300 feet of the Owen 1 Route

| Facility Type | Double Circuit | Parallel Construction |
|---|----------------|-----------------------|
| Homes 0-50 feet | 0 | 0 |
| Homes 50-100 feet | 2 | 2 |
| Homes 100-150 feet | 10 | 8 |
| Homes 150-300 feet | 19 | 21 |
| Total Homes | 31 | 31 |
| Commercial/industrial/office 0-50 feet | 0 | 0 |
| Commercial/industrial/office 50-100 feet | 0 | 0 |
| Commercial/industrial/office 100-150 feet | 0 | 0 |
| Commercial/industrial/office 150-300 feet | 0 | 0 |
| Total Commercial/Industrial/Office | 0 | 0 |
| Agricultural outbuilding 0-50 feet | 1 | 1 |
| Agricultural outbuilding 50-100 feet | 0 | 0 |
| Agricultural outbuilding 100-150 feet | 3 | 1 |
| Agricultural outbuilding 150-300 feet | 18 | 19 |
| Total Agricultural Outbuilding | 22 | 21 |
| Total Facilities | 53 | 52 |

There are no apartments, schools, day care center, hospitals, nursing homes, or playgrounds within 300 feet of this route. One park is within 100 to 150 feet.

Historical and archeological sites

Records of the SHSW indicate that an archeological site is present near the proposed ROW. It is an archaic campsite or village near the Flambeau River (segment 144). The Pilgrim Rest Cemetery is also listed in the SHSW records, but could easily be avoided by using segment 203. The SHSW would require the archaic campsite or village to be field surveyed by a qualified archeologist if the project is approved and the Owen 1 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Owen 2 Route

Detailed description

The Owen 2 Route is 116 miles long. Figures 9-4 to 9-6 show the route from north to south. The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line. The route follows the transmission line south for about three miles. It then extends to follow the Lakehead petroleum pipeline for most of the next 38 miles between Exeland and Gilman, in Taylor County. The route crosses Big Weirgor Creek, Buff Creek, STH 40, the Chippewa River, CTH J, the Little Thornapple River, CTH A, the Thornapple River, Twin Creek, and USH 8 before crossing the Flambeau River southwest of Ladysmith. Where the route crosses USH 8,

the new line would be double circuited with an NSP 69 kV transmission line for about two miles. South of the Flambeau River, the route crosses STH 27, Deer Tail Creek, CTH I, Main Creek, and CTH G. Near Sheldon, it crosses CTH VV (both west and south of the community), the Little Jump River, STH 194, and the Jump River. The route also passes near Bass Lake in the town of Thornapple, and Conrath. Between the west Taylor County line and Gilman the route crosses the Fisher River, CTH M, CTH H, and Elder Creek. The route leaves the pipeline to detour around Gilman, crossing STH 64, the Yellow River, and CTH B. South of Gilman the route follows the Wisconsin Central Railroad for about two miles before returning to the petroleum pipeline near Lublin. The route leaves the pipeline, southeast of Lublin, near the Clark County line and proceeds cross-country, due south, for approximately seven miles as it detours around the communities of Owen and Withee, until intersecting with an existing NSP 115 kV transmission line, about four miles southwest of Withee. CTH X and STH 29/73 are crossed by this section of the route. The route turns eastward and follows an NSP 115 kV transmission line row east for about seven miles until it joins the Wisconsin Central Railroad corridor south of Owen. The new line could be double circuited for six miles with the existing transmission line as it crosses CTH O, the Black River, STH 73, the Popple River, and CTH D. The NSP line has recently been rebuilt to 161 kV specifications and the easternmost one mile has been rerouted.

About two miles southeast of Owen, at the intersection of the existing NSP 115 kV line and the rail corridor line, the route turns southeast and follows the railroad for about seven miles, crossing CTH P and CTH N near Atwood. At a point about two miles northwest of Riplinger the route turns and proceeds eastward, cross-country, for about six miles, to the Marathon County line at STH 13, just south of Unity. The South Fork Popple River and CTH Q are crossed by the route in Clark County. In Marathon County the route continues eastward, cross-country, for approximately 31 miles, passing about a mile north of Stratford, until joining an existing WPSC 345 kV transmission line. The line would be double circuited with the existing 345 kV line to the Weston Substation.

Figure 9-4 Owen 2 Route (1 of 3)

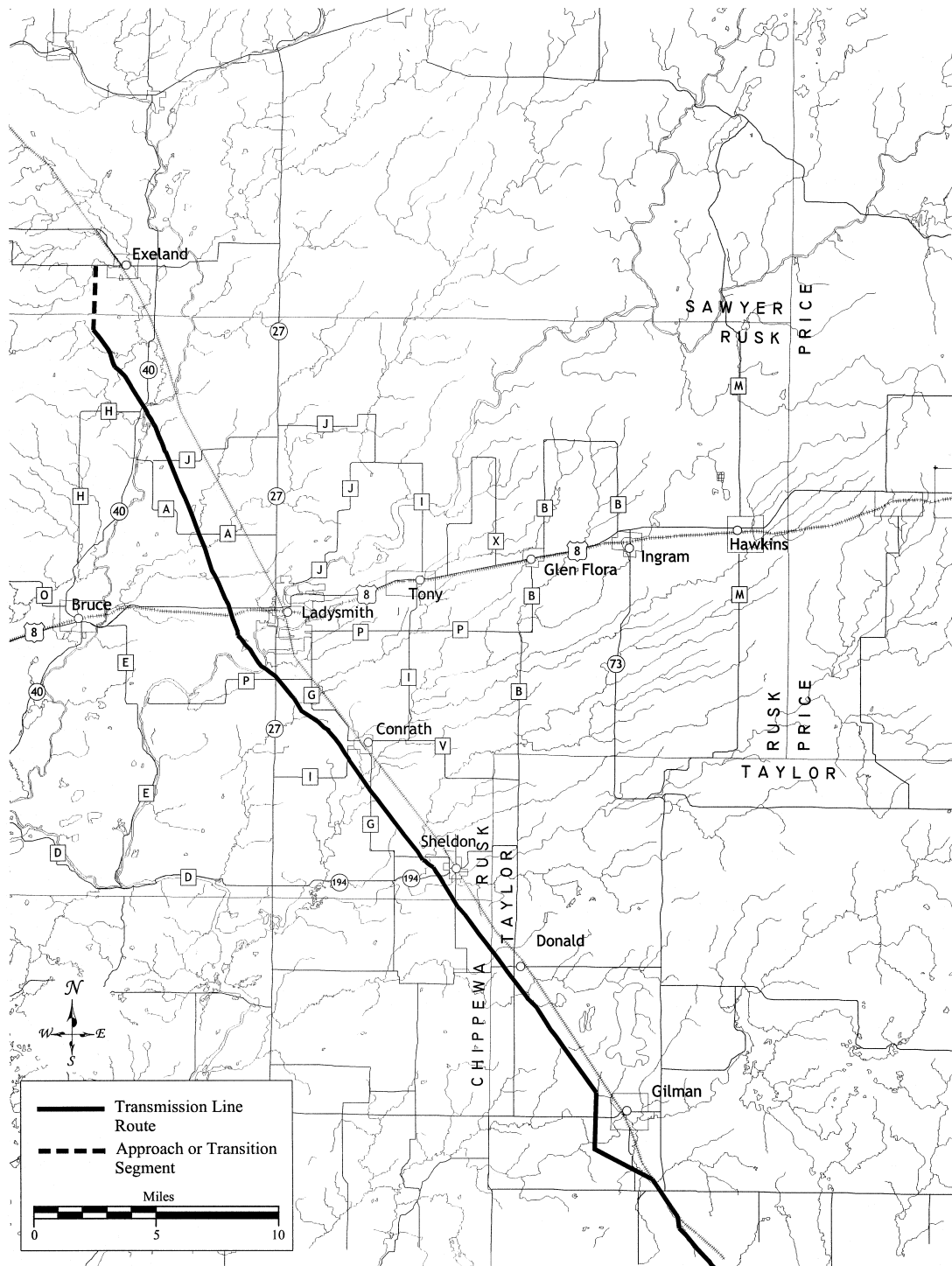


Figure 9-5 Owen 2 Route (2 of 3)

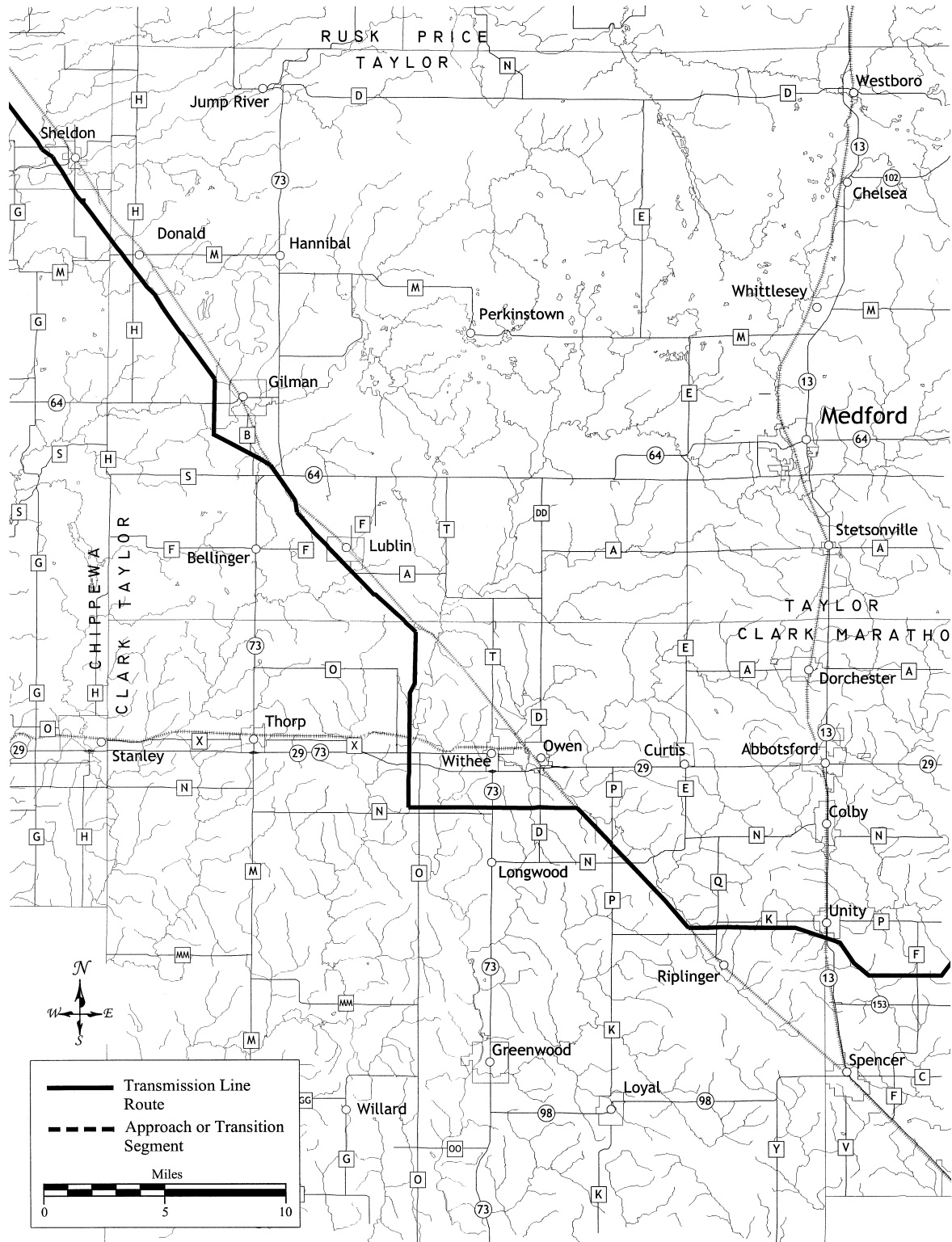
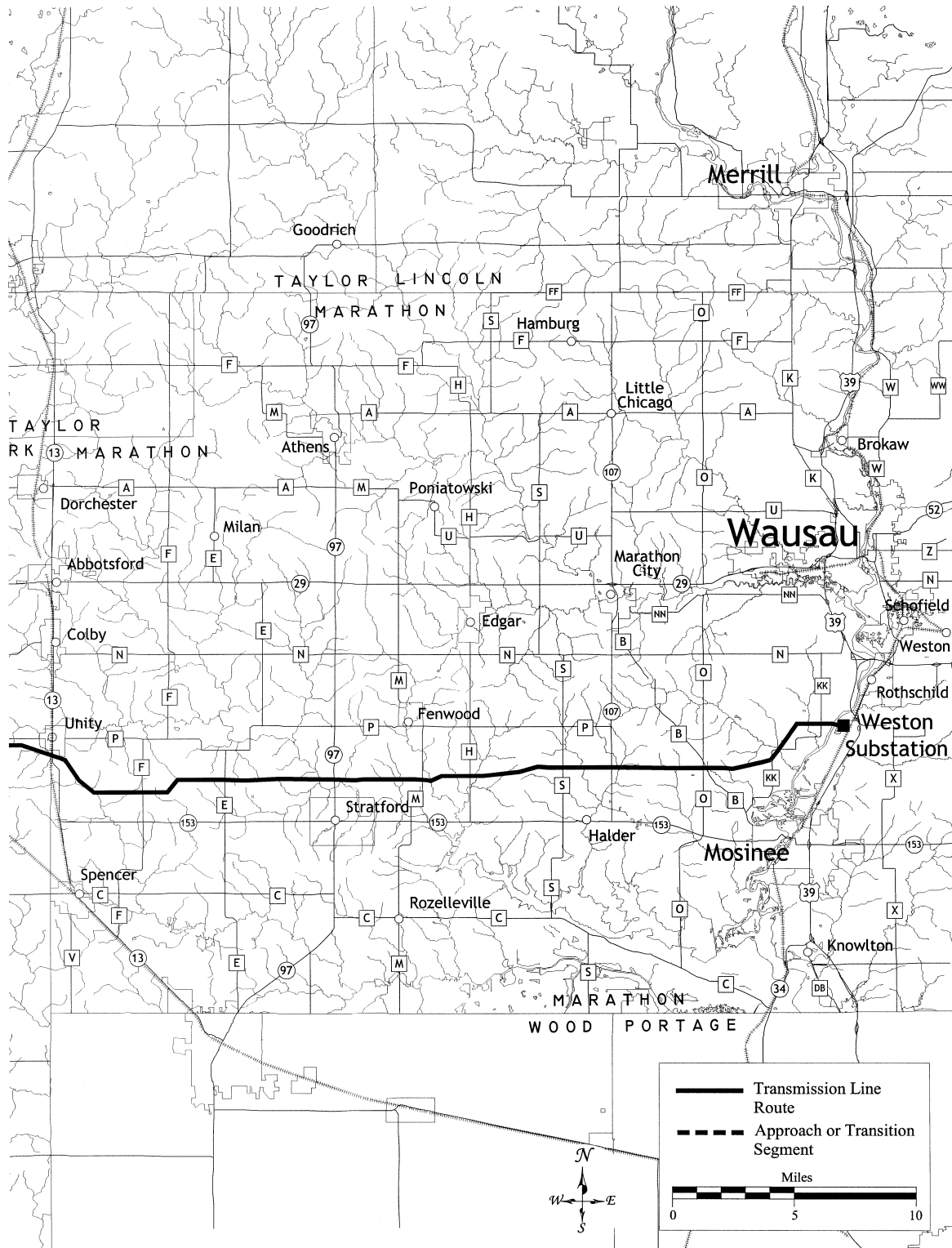


Figure 9-6 Owen 2 Route (3 of 3)

Natural resources

Lakes

Bass Lake, located northwest of Ladysmith, lies within 300 feet of segment 242. The route follows the Lakehead pipeline as it passes near the lake. Bass Lake has a wooded, undeveloped shoreline, with a road skirting its southern end. This road would lie between the power line and the lake for part of its length. A canoe launching point is located on this stretch of road.

Rivers and streams

There are 39 river/stream crossings on the Owen 2 Route. Two of the crossings are over waterways that have been designated as either OERW and three of the crossings are over waterways classified as trout streams by the DNR. Twenty-eight of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the transmission line, but they are not included in this analysis.

Table 9-6 indicates which streams along the Owen 2 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout is dependent on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the stream habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

Table 9-6 Rivers and streams on the Owen 2 Route (from north to south)

| | | |
|----------------------------|-----------------------------|--------------------|
| Big Weirgor Creek * τ | Yellow River | Rock Creek ** |
| Buff Creek ** | Hay Creek ** | Unnamed stream ** |
| Chippewa River ** | Hay Creek ** | Fenwood Creek |
| Little Thornapple River ** | North Fork Eau Claire River | Unnamed stream ** |
| Thornapple River ** | Black River | Rock Run |
| Unnamed stream ** | Popple River | Burns Creek ** |
| Twin Creek ** | South Fork Popple River ** | Freeman Creek ** τ |
| Flambeau River | Little Eau Pleine River ** | Unnamed stream ** |
| Deer Tail Creek ** | Little Eau Pleine River ** | Hog Creek ** |
| Little Jump River | Little Eau Pleine River ** | Unnamed stream ** |
| Jump River ** | Little Eau Pleine River ** | Fourmile Creek |
| Unnamed stream | Little Eau Pleine River ** | Black Creek ** τ |
| Fisher River ** | Big Eau Pleine River ** | Wisconsin River ** |

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed, or other streams or wetlands.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing.

The following section describes specific river and stream crossings on the Owen 2 Route and the potential impacts of constructing the line in these areas.

Chippewa River

Segment 303 crosses the Chippewa River about 700 feet north of an existing petroleum pipeline crossing. A farmstead is located along the river, an equal distance north of the proposed crossing. The riverbanks are wooded at this location. The transmission line would alter the visual setting at the crossing. Boaters would be the principal group impacted.

Flambeau River

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. A primitive road leads down to the river where the Lakehead petroleum pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest. This expansion would consist of up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing were moved about a quarter mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345-kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Outstanding and Exceptional Resource Waters OERW)

The route crosses Big Weirgor Creek south of Exeland (segment 308) and the Jump River south of Sheldon (segment 242'). Each of these streams is an ERW.

Nationwide Rivers Inventory (NRI)

The Owen 2 route would cross four river segments listed in the NRI. They are the Chippewa River (segment 303), the Thornapple River (segment 242'), the Jump River (segment 239), and the Wisconsin River (segment 1a). The first three rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through a stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a

temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.²³⁷

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Wetlands

Construction of the transmission line has the potential to damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times. Heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in the wetlands. The excavation and heavy equipment use required in erecting a structure would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetlands, unless a new access route to

²³⁷ Use of private roads or logging roads is possible if arrangements can be made with the owner. Some incremental impact is likely to occur since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW would require the clearing of brush or timber over a distance of up to a mile or more, rendering such access impractical. A wetland over 1,000 feet in width would necessarily require driving equipment in the wetland, due to the need to place one or more structures.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Owen 2 Route would cross many wetlands as it passes from Exeland to Weston. The majority of wetlands is in the forested or shrub/scrub categories. The emergent-type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 28 wetlands are greater than 1,000 feet wide at the point where the Owen 2 Route crosses them and would require one or more structures to be placed within them.²³⁸ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 110 wetlands on the Owen 2 Route would be at risk of being driven through by construction equipment.

In general, wetlands are more common and less accessible between Exeland and Gilman than between Gilman and Weston. Segments 242, 237, 201, and 11 cross a large number of wetlands. The relatively high road density in Marathon, Clark, and southern Taylor Counties provides improved ROW access opportunities, reducing the probability of wetlands impacts. Much of the route follows an existing pipeline corridor, with shorter sections sharing railroad and electric transmission line corridors. The incremental wetland impacts along these portions of the route may be reduced if the existing facilities have already degraded wetlands along the ROW.

Sensitive wetland types

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

²³⁸ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission structures represents a “best case scenario.”

The Owen 2 Route does not cross any tamarack/spruce bogs, but it does pass through two ericaceous bogs for a total crossing distance of 2,500 feet. Segment 242' has a 2,000-foot crossing of this type of bog, requiring that at least one transmission structure be placed in the wetland. The segment is adjacent to a petroleum pipeline. The other bog is along segment 310, where there is an existing transmission line.

High quality wetland resources

Two wetland (forested and non-forested) areas on the Owen 2 Route are associated with OERW or trout streams:

- Forested wetlands associated with Freeman Creek, a trout stream (segment 11, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 9-7 Wetland resources affected by the Owen 2 Route

| Length of Forested Wetland Crossed (miles) | Length of Non-Forested Wetland Crossed (miles) | Total Length of Wetland Crossed (miles) | Total Area of Wetland Affected (acres) |
|--|--|---|--|
| 6.5 | 13.9 | 20.4 | 346 |

Forests

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120 to 150 foot-wide ROW would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120 to 150-foot-wide ROW through 16.0 miles of forest. This new ROW plus the incremental widening along existing ROWs would require a total of 443 acres of ROW clearing in upland forest and 98 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line right-of-way contain 46 acres of cleared upland forest and 12 acres of cleared forested wetland.

Only a 4.8-mile portion of one segment (213') is being considered as a possible candidate for parallel construction. Because this is only a small portion of the route, for analysis purposes this portion of the route is considered to be double circuit. If parallel construction is used on segment 213', eight additional acres of upland forest and three more acres of forested wetland would be cleared.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts of forest clearing throughout the project area include degradation of woodland quality due to encroachment of weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

Table 9-8 Forest impacts for the Owen 2 Route

| | Double Circuit |
|--|----------------|
| Total new forest crossed (miles)* | 16.0 |
| Upland forest cleared (acres) | 443 |
| Wetland forest cleared (acres) | 98 |
| Total forest cleared (acres) | 541 |

* No corridor currently exists of any kind.

Forest Fragmentation

An analysis of the forest fragmentation potential for the Owen 2 Route was completed as described in Chapter 6. Only two forest blocks greater than 1,000 acres in size are present along the Owen 2 Route due to the prevalence of agricultural land use throughout much of this portion of the project area. The route would create a new corridor through these two blocks. One block is in a planned expansion area for the Burma Road Unit of the Marathon County Forest (segment 11). The other is near the Nine Mile Unit of the Marathon County Forest.

A similar analysis was conducted for the final EIS using a forest block size of 200 to 1,000 acres. In the more open landscape encountered along this route, a wooded block of 200 acres or more can provide a haven for many less common wildlife and plant species. Fragmentation of these areas could have a major effect on the potential for these species to thrive and reproduce in this area of the state. At least 17 forest blocks 200 to 1,000 acres have been identified on the Owen 2 Route.²³⁹ Six of these blocks would be fragmented by the creation of a new corridor. In the

²³⁹ These blocks are mutually exclusive of the 1,000+ acre blocks and thus have not been double counted for this analysis.

other 11 blocks the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Owen 2 Route could pass through up to 1.75 miles of forest owned by forest products industries (industrial forest). This industrial forest is located in Marathon, Rusk, and Taylor Counties.

County forest land

Marathon County Forest

The route passes about 0.25 mile north of the Burma Road Unit of the Marathon County Forest. About 0.75 mile of segment 11 lies within the potential purchase zone for expansion of this county forest unit.

Near the Weston Power Plant the route crosses about 1.6 miles of the Nine-Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. The route avoids most trails in the forest. For most of the distance through the county forest, the new line would be double circuited with an existing WPSC 345 kV line.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Owen 2 Route are described below.

The Owen 2 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment does not enter the rivers and if proper erosion control measures are implemented.

Bird strikes are a concern where the line would span major rivers like the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use these areas and have been observed in several locations along the route. Major rivers also can serve as corridors for daily and migratory flights of many bird species.

Segment 201 crosses or lies near several prairie chicken booming grounds in eastern Clark County. The greater prairie chicken is listed as a threatened species in Wisconsin. The line would pose a collision hazard to prairie chickens.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been observed in three different locations along the route (segments 1 and 242). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

The Blanding's turtle (*Emydoidea blandingii*), a state-threatened species, has been observed along segment 239 west of Sheldon. Avoiding this area during egg-laying and hatching periods could reduce possible impacts on the Blanding's turtle.

Table 9-9 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 9-9 Threatened and endangered species for the Owen 2 Route

| Scientific Name | Common Name | Status |
|---------------------------------|----------------------------------|--------|
| <i>Clemmys insculpta</i> | Wood turtle | THR |
| <i>Emydoidea blandingii</i> | Blanding's turtle | THR |
| <i>Cyclonaias tuberculata</i> | Purple wartyback mussel | END |
| <i>Plethobasus cyphus</i> | Bullhead mussel | END |
| <i>Ophiogomphus howei</i> | Pygmy snaketail dragonfly | THR |
| <i>Ophiogomphus anomalus</i> | Extra-striped clubtail dragonfly | END |
| <i>Ophiogomphus susbebecha</i> | Saint Croix snaketail dragonfly | END |
| <i>Tympanuchus cupido</i> | Greater prairie-chicken | THR |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | SC/FL |

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

Two parts of the route are in commercial/industrial zones. One is the Weston Power Plant site. The other is located west of Sheldon in Rusk County. Conservancy/recreational is the zoning designation along 1.8 miles of the route. Agricultural is by far the most common land use

zoning designation with 41.7 miles lying in agricultural zones. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity areas of use (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 3.4 miles of the route pass through areas zoned for residential use. About 1.8 miles of this portion lie along existing transmission line corridors. This residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The properties crossed are listed in the order they are crossed, north to south. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forest lands are discussed in more detail under the Forest Impacts section of this chapter.

| | |
|--------------------------------------|--------------|
| • DNR | Segment 303 |
| • Town of Grant | Segment 242' |
| • United States of America | Segment 242' |
| • Farmers Home Administration | Segment 201 |
| • Marathon County | Segment 201 |
| • Town of Mosinee | Segment 11 |
| • Marathon High School | Segment 11 |
| • Rib Mountain Metro Sewage District | Segment 1a |

Agriculture

The route crosses a total of 58.1 miles of agricultural land (50 percent of the total length of the route). Agricultural activity is less common at the beginning of the route in parts of Sawyer and Rusk Counties and at the termination point in Marathon County near the Weston Power Plant. These locations are heavily forested. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. In Clark, Taylor, Chippewa, and Rusk Counties, the route would affect agricultural land used for dairy, beef, and Christmas tree production as well as smaller amounts of forested land.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Owen 2 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on whether any facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 to 45 feet taller than existing poles to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Owen 2 Route would be in those areas that do not have existing facility corridors. About 50 percent of the length of the route, 58.5 miles, does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW where none currently exists. Most of this is located on farmland in Clark and Marathon Counties.

An increased level of visual impact would occur on the portions of the Owen 2 Route where there is currently only a pipeline. Although there is an established cleared ROW, no above ground or vertical facilities are present. Because the pipeline companies may not allow transmission line structures on or overhanging the existing pipeline ROW, it would be necessary to widen the cleared corridor by 108 to 132 feet. The new, wider corridor would also contain a very visible transmission line. About 29 percent, or 33.8 miles, of the proposed Owen 2 Route is located in a corridor with only an existing pipeline. This corridor is located between Exeland and Owen. Another 2.2 miles of the proposed route is adjacent to a 69 kV transmission line and a pipeline west of Ladysmith. The new line would be double circuited with this existing 69 kV line, on poles that would be 125 to 135 feet tall.

About 7.5 percent, or 8.7 miles, of the Owen 2 Route is proposed to be located along railroad corridors. Because the railroad company may not allow transmission line structures on or overhanging the existing railroad ROW, the existing corridors would be widened by 98 to 122 feet. Railroad facilities are generally more visible than a pipeline corridor, but the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of corridor sharing with a railroad would be less than along pipeline corridors, but more than where the line is double circuited with or built parallel to an existing transmission line. About two miles of the route parallel a railroad corridor between Gilman and Lublin in Taylor

County, and about seven miles parallel a railroad corridor heading southeast from Owen in Clark County.

The remaining 13 percent, about 15.4 miles, of the Owen 2 Route would be located where there already are electric transmission lines. About 3.6 miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole, double circuit structures that would be 125 to 135 feet tall. Another transmission line corridor that would be used is now occupied by an NSP 115 kV line on H-frame structures that are about 65 feet tall. This corridor runs east-west south of Owen and Withee. The proposed new transmission line would be double circuited with this line on single pole structures for the westernmost 2.3 miles (the part west of the Black River) of this shared corridor. These double circuit single pole structures would be 125 to 135 feet tall.

East of the Black River an additional 1.2 miles of the existing line could also be double circuited, or the new line could be built parallel to the existing line on H-frame or single pole structures. If the new line is built parallel to the existing line, the ROW would be expanded by 100 to 120 feet, and the second set of poles would be 85 to 105 feet tall with corner structures 100 to 130 feet tall. The existing line extends further east, but is scheduled to be removed from this corridor as authorized under a previous CPCN approved by the Commission (for the Baldwin-Marathon City Project). The proposed line on the Owen 2 Route would use one mile of this vacated corridor. An additional 30 to 60 feet of new ROW would be needed to accommodate either single pole or H-frame structures 85 to 105 feet tall with corner structures 100 to 130 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the Lakehead petroleum pipeline near Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. North of Ladysmith and near the Weston Power Plant the landscape is heavily forested. Elsewhere the landscape is more open, with farmland predominating. In general, the southern part of the route is more densely populated than the rest of the route.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Owen 2 Route crosses the Chippewa

and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. The Rusk County Trails Association maintains a system of bike, ski, and hiking trails on the part of the property located north and west of the Flambeau River. These trails also are the site of bicycle races that are elements of the Badger State Games. Visual impacts to the trail system are reduced by following the existing cleared pipeline corridor and by avoiding the largest concentrations of trails. A primitive road leads down to the river where the Lakehead pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2, 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest along up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing were moved about a 0.25 mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

The Ice Age NST is proposed to extend through Taylor County, crossing the Owen 2 Route in the vicinity of segment 229. An exact location for the future trail has not been determined, but it is anticipated that it would cross the proposed power line route between Gilman and Lublin. The area contains much open land, and the power line would be highly visible from the trail, detracting from the aesthetic experience of trail users.

Robin Avenue, in the town of Green Grove, Clark County, has been designated a rustic road (R-73) by the DOT. Segment 201 follows the Wisconsin Central Railroad line at this location, crossing the rustic road next to an old one-lane wooden bridge. The area is mostly farm fields with some blocks of woods nearby. A high-voltage electric transmission line would not be compatible with the rural character of a rustic road.

The Nine-Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Visual impacts would be less serious because the new line would be double circuited with the existing 345 kV line.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetic and property values, the number of structures within 300 feet of the proposed centerline is provided in the list below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of structures within 300 feet on the Owen 2 Route with the number on other Owen Routes.

Table 9-10 Number of facilities within 300 feet of the Owen 2 Route

| Facility Type | Double Circuit |
|---|----------------|
| Homes 0-50 feet | 0 |
| Homes 50-100 feet | 4 |
| Homes 100-150 feet | 11 |
| Homes 150-300 feet | 30 |
| Total Homes | 45 |
| Commercial /industrial/office 0-50 feet | 0 |
| Commercial/industrial/office 50-100 feet | 0 |
| Commercial/industrial/office 100-150 feet | 0 |
| Commercial/industrial/office 150-300 feet | 4 |
| Total Commercial/Industrial/Office | 4 |
| Agricultural outbuilding 0-50 feet | 1 |
| Agricultural outbuilding 50-100 feet | 3 |
| Agricultural outbuilding 100-150 feet | 2 |
| Agricultural outbuilding 150-300 feet | 21 |
| Total Agricultural Outbuilding. | 27 |
| Total Facilities | 76 |

There are no apartments, schools, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

Historical and archeological sites

Two archeological sites listed with the SHSW have been identified near the proposed ROW. They include areas of stone fragment scatterings of unknown prehistoric origin south of Ladysmith (segment 242). The SHSW would require the sites to be field surveyed by a qualified archeologist if the project is approved and if the Owen 2 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Owen 3 Route

Detailed description

The Owen 3 Route is 118 miles long. Figures 9-7 to 9-9 show the route from north to south. The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line. The route follows the transmission line south for about three miles. It then extends southeast to follow the Lakehead petroleum pipeline corridor for most of the next 38 miles between Exeland and Gilman, in Taylor County. The route crosses Big Weirgor Creek, Buff Creek, STH 42, the Chippewa River, CTH J, the Little Thornapple River, CTH A, the Thornapple River, Twin Creek, and USH 8 before crossing the Flambeau River southwest of Ladysmith. Where the route crosses USH 8, the line would be double circuited with an NSP 69 kV transmission line

for about two miles. South of the Flambeau River, the route crosses STH 27, Deer Tail Creek, CTH I, Main Creek, and CTH G. Near Sheldon, it crosses CTH VV (both west and south of the community), the Little Jump River, STH 194, and the Jump River. The route also passes near Bass Lake in the town of Thornapple, and Conrath. Between the western Taylor County line and Gilman the route crosses the Fisher River, CTH M, CTH H, and Elder Creek. The route leaves the pipeline to detour around Gilman, crossing STH 64, the Yellow River, and CTH B.

South of Gilman the route follows the Wisconsin Central Railroad for about two miles before rejoining the pipeline corridor near Lublin. The route leaves the pipeline corridor near the Clark County line and proceeds cross-country, due south, for approximately seven miles as it detours around the communities of Owen and Withee, until it joins an existing NSP 115 kV transmission line, about four miles southwest of Withee. CTH X and STH 29/73 are crossed by this route section. The route turns eastward and follows the NSP 115 kV transmission line ROW east for about 17 miles, passing about two miles south of Owen and Withee, until reaching a point just south of Abbotsford where the existing line changes to WPSC ownership. The new line could be double circuited with six miles of the westernmost portion of NSP's existing line. The NSP line has recently been rebuilt to 161 kV specifications and the portion east of Owen has been re-routed. Consequently, the portion of the NSP ROW east of Owen will be vacated by the time of construction of the proposed Arrowhead-Weston line and could be used for the new 345 kV line. CTH O, the Black River, STH 73, the Popple River, CTH D, the South Fork Popple River, CTH P, CTH E, and Dill Creek would be crossed in Clark County.

The route continues east into Marathon County along the existing WPSC 115 kV transmission line for about 14 miles. The new line could be built as a double circuit line with the existing line, which has been constructed for 161 kV but is operated at 115 kV. Where the existing WPSC line angles northeast (about four miles west of Edgar), the route continues due east for another 1.5 miles. A quarter mile east of CTH M the route turns southeast and continues for four miles, crossing CTH N. South of Edgar, the route turns, proceeding east about 11 miles, crossing CTH H, CTH S, STH 107, CTH B, Fourmile Creek, and CTH O. A half-mile east of CTH O the route turns and heads south about two miles, again crossing Fourmile Creek. The route then turns east and proceeds about a mile before angling southeast to Spring Brook Road and a pipeline corridor. These facilities are followed for about a mile until the route joins an existing WPSC 345 kV transmission line. The new line would be double circuited with the 345 kV line. Fourmile Creek would be crossed again. The new line follows the 345 kV line to its terminus at the Weston Substation.

Figure 9-7 Owen 3 Route (1 of 3)

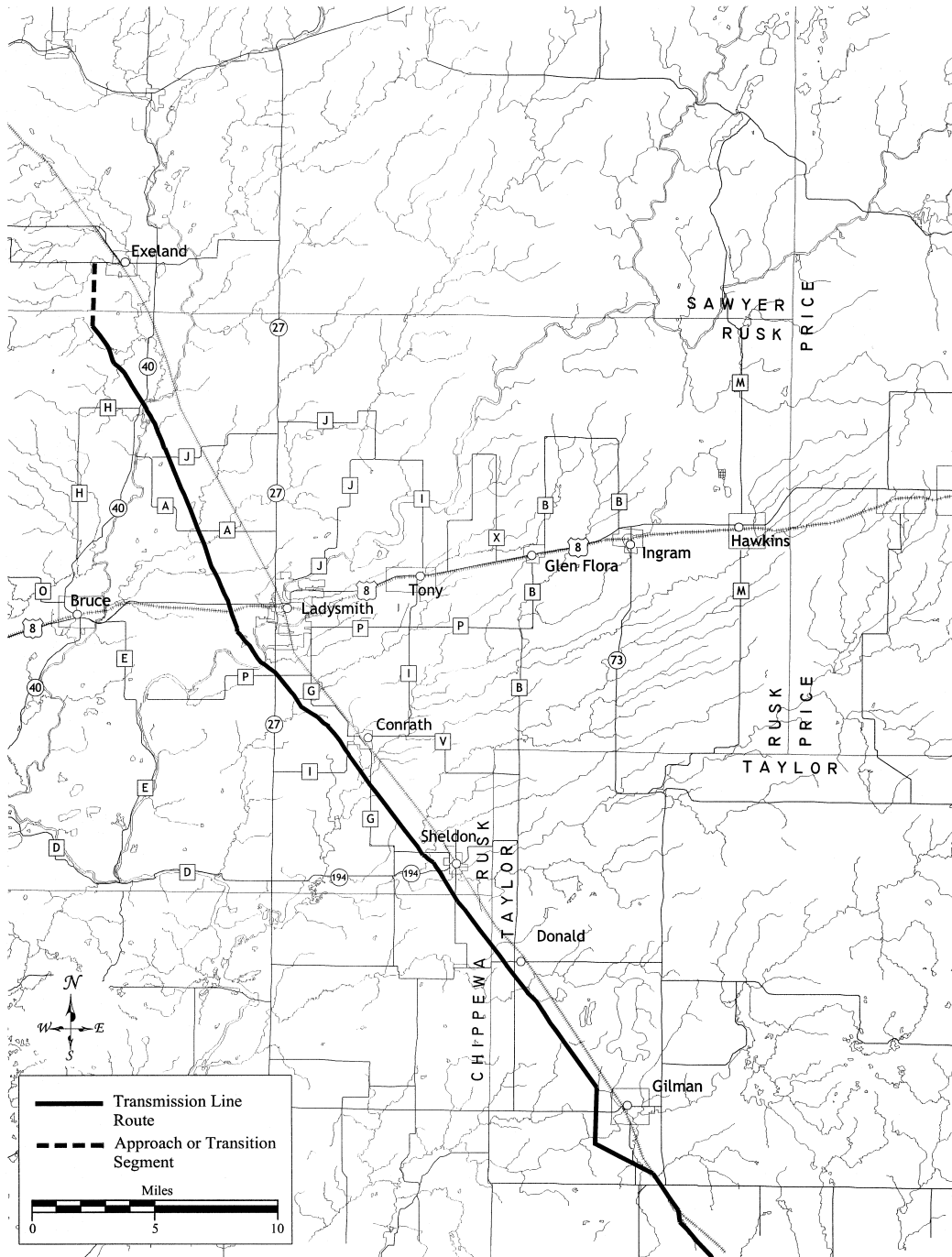


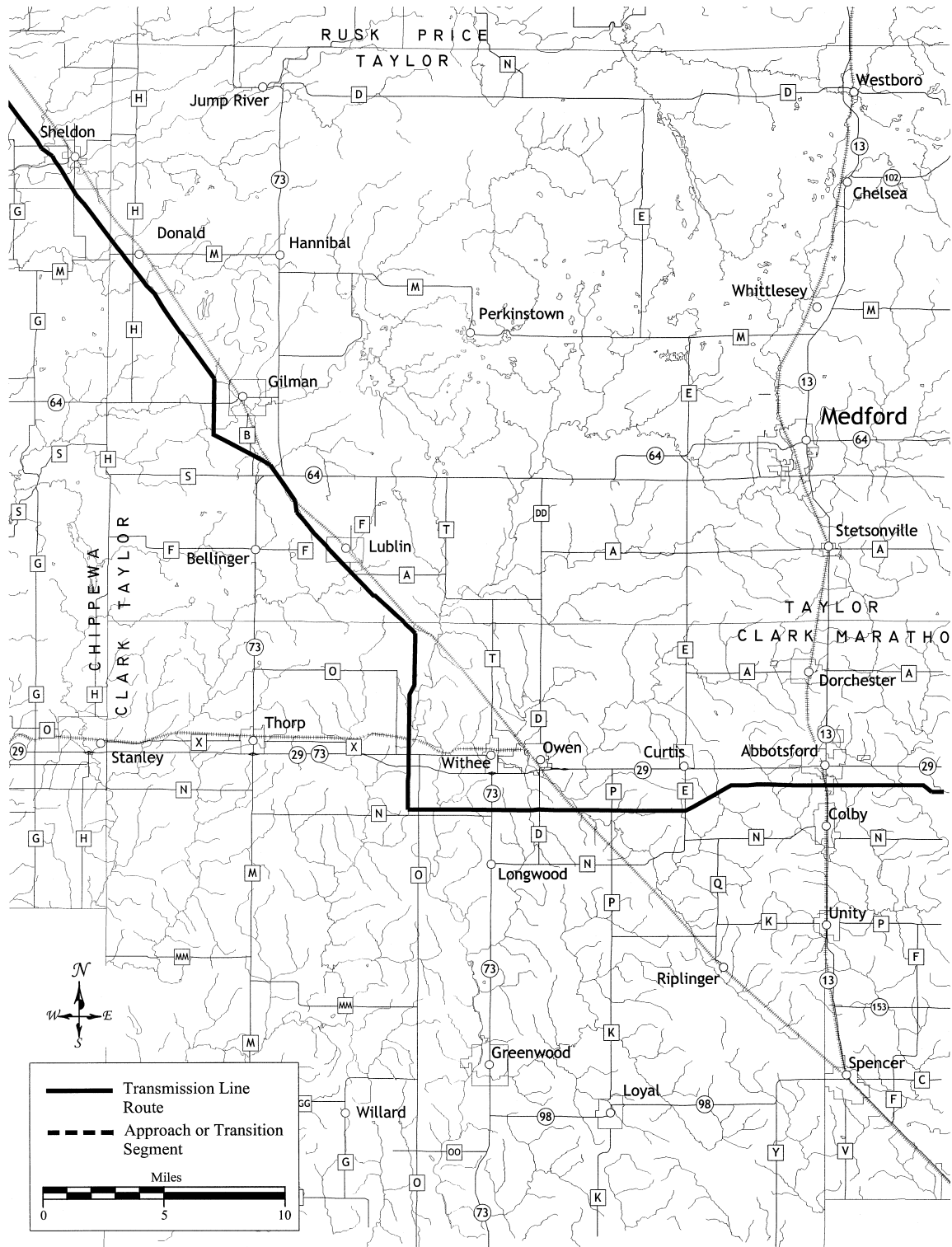
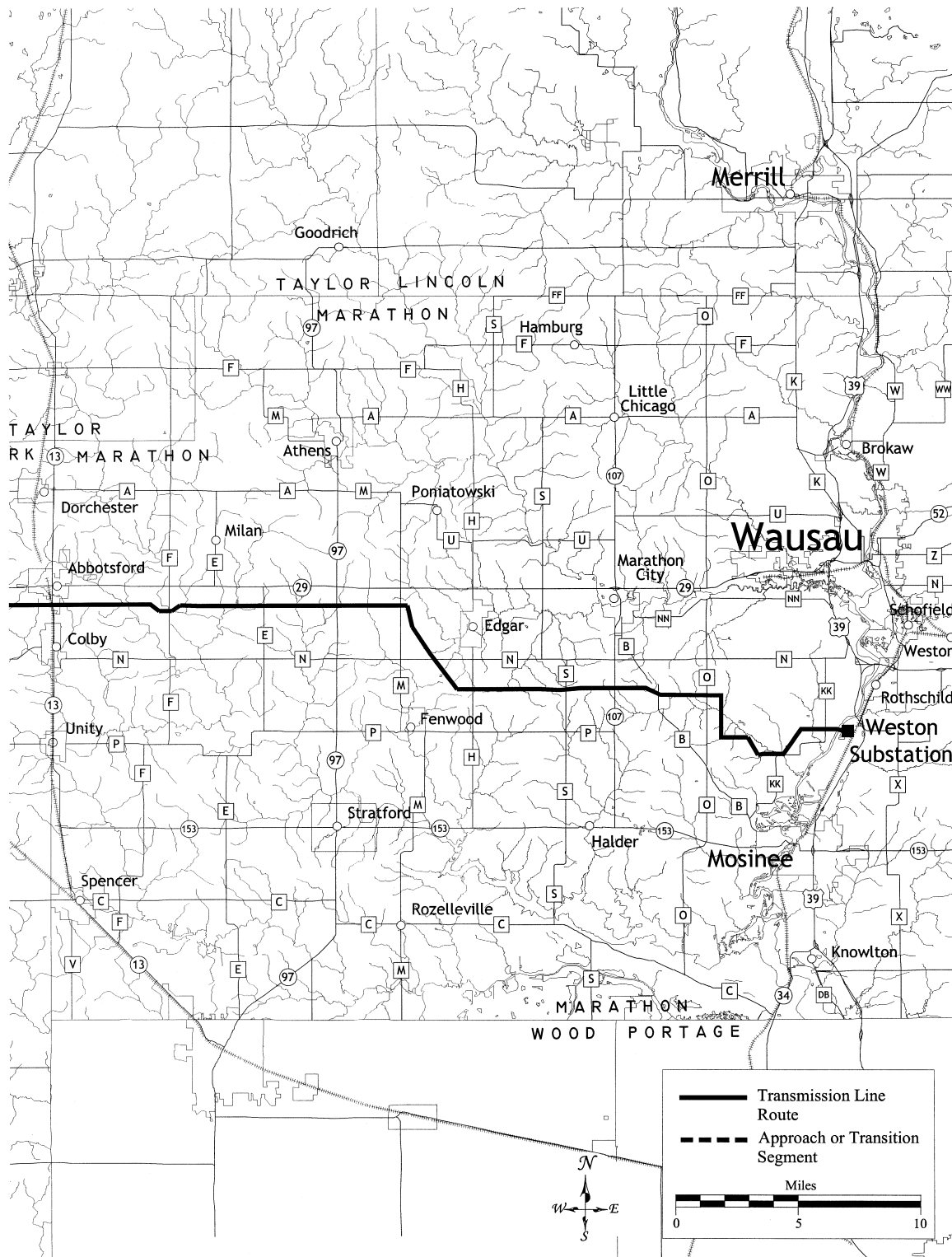
Figure 9-8 Owen 3 Route (2 of 3)

Figure 9-9 Owen 3 Route (3 of 3)

Natural resources

Lakes

The lakes affected by this route are the same as for the Owen 2 Route.

Rivers and streams

There are 41 river/stream crossings on the Owen 3 Route. Eight of the crossings are over waterways that have been designated as either OERW and 10 of the crossings are over waterways classified as trout streams by the DNR. Twenty-four of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the transmission line, but they are not included in this analysis.

Table 9-11 indicates which streams along the Owen 3 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout is dependent on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the aquatic habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

Table 9-11 Rivers and streams on the Owen 3 Route (from north to south)

| | | |
|----------------------------|-----------------------------|----------------------|
| Big Weirgor Creek * τ | Hay Creek ** | Fourmile Creek *** τ |
| Buff Creek ** | Hay Creek ** | Fourmile Creek *** τ |
| Chippewa River ** | North Fork Eau Claire River | Fourmile Creek *** τ |
| Little Thornapple River ** | Black River | Fourmile Creek *** τ |
| Thornapple River ** | Popple River | Fourmile Creek *** τ |
| Unnamed stream ** | South Fork Popple River | Fourmile Creek * τ |
| Twin Creek ** | Dill Creek | Unnamed stream |
| Flambeau River | Porky Creek ** | Fourmile Creek ** τ |
| Deer Tail Creek ** | Big Eau Pleine River ** | Unnamed stream ** |
| Little Jump River | Marsh Creek | Unnamed stream ** |
| Jump River *** | Randall Creek ** | Fourmile Creek τ |
| Unnamed stream | Hamann Creek | Black Creek ** τ |
| Fisher River ** | Brod Creek | Wisconsin River ** |
| Yellow River | Fenwood Creek | |

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed, or other streams or wetlands.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing.

The following section describes specific river and stream crossings on the Owen 3 Route and the potential impacts of constructing the line in these areas.

Chippewa River

Segment 303 crosses the Chippewa River about 700 feet north of an existing petroleum pipeline crossing. A farmstead is located along the river, an equal distance north of the proposed crossing. The riverbanks are wooded at this location. The transmission line would alter the visual setting at the crossing. Boaters would be the principal group impacted.

Flambeau River

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. A primitive road leads down to the river where the Lakehead petroleum pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest. This expansion would consist of up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing were moved about a quarter mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345 kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Fourmile Creek

Segment 14b would cross Fourmile Creek in Marathon County five or more times within a distance of two miles. A portion of the stream flows within the transmission line ROW, parallel to the proposed centerline, maximizing impacts to the stream from construction and ROW maintenance. This stretch of the stream is classified as an ERW.

Other Outstanding and Exceptional Resource Waters (OERW)

The route crosses Big Weirgor Creek south of Exeland (segment 308) and the Jump River south of Sheldon (segment 242'). Each of these streams is an ERW.

Nationwide Rivers Inventory (NRI)

The Owen 3 route would cross four river segments listed in the NRI. They are the Chippewa River (segment 303), the Thornapple River (segment 242'), the Jump River (segment 239), and the Wisconsin River (segment 1a). The first three rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through a stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.²⁴⁰

Wetlands

Construction of the transmission line has the potential to damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and the bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

²⁴⁰ Use of private roads or logging roads is possible if arrangements can be made with the owner. Some incremental impact is likely to occur since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

Frozen wetlands are better able to resist rutting, but many wetlands do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times. Heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in the wetlands. The excavation and heavy equipment use required in erecting a structure would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetlands, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW would require the clearing of brush or timber over a distance of a mile or more, rendering such access impractical. A wetland over 1,000 feet in width would necessarily require driving equipment in the wetland, due to the need to place one or more structures.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Owen 3 Route would cross many wetlands as it passes from Exeland to Weston. The majority of wetlands fall in the forested or shrub/scrub categories. The emergent type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 29 wetlands are greater than 1,000 feet wide at the point where the Owen 3 Route crosses them and would require one or more structures to be placed within them.²⁴¹ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 103 wetlands on the Owen 3 Route would be at risk of being driven through by construction equipment.

In general, wetlands are more common and less accessible between Exeland and Gilman than between Gilman and Weston. Segments 242, 237, and 14b cross a large number of wetlands. The relatively high road density in Marathon, Clark and southern Taylor Counties provides improved ROW access opportunities, reducing the probability of wetlands impacts. More than half the route follows existing facility corridors--mostly pipeline and electric transmission line ROWs. The incremental wetland impacts along these portions of the route may be reduced if the existing facilities have already degraded wetlands along the ROW.

Sensitive wetland types

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Owen 3 Route does not cross any tamarack/spruce bogs, but it does pass through two ericaceous bogs for a total crossing distance of 2,500 feet. Segment 242' has a 2,000-foot crossing of this type of bog, requiring that at least one transmission structure be placed in the wetland. The segment is adjacent to a petroleum pipeline. The other bog is along segment 310, where there is an existing transmission line.

High quality wetland resources

Two wetland (forested and non-forested) areas on the Owen 3 Route are associated with OERW or trout streams:

- A complex of wetlands southeast of Edgar associated with Fourmile Creek, an ERW and trout stream (segments 14b and 7a, mostly new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

²⁴¹ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structures represents a "best case scenario."

Table 9-12 Wetland resources affected by the Owen 3 Route

| | Length of Forested Wetland Crossed (miles) | Length of Non-forested Wetland Crossed (miles) | Total length of Wetland Crossed (miles) | Total Area of Wetland Affected (acres) |
|----------------|--|--|---|--|
| Double circuit | 6.1 | 13.4 | 19.5 | 320 |
| Parallel | 6.2 | 13.8 | 20.0 | 326 |

Forests

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120 to 150-foot wide right-of-way would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120- to 150-foot-wide ROW through 11.2 miles of forest. If the new transmission line is built as a double circuit with the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROW would require a total of 373 acres of ROW clearing in upland forest and 76 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 72 acres of cleared upland forest and 24 acres of cleared forested wetland.

If the new transmission line is built parallel to the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROW would require a total of 417 acres of ROW clearing in upland forest and 87 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 30 acres of cleared upland forest and 16 acres of cleared forested wetland.

Table 9-13 Forest impacts for Owen 3 Route

| | Double Circuit | Parallel Construction |
|--|----------------|-----------------------|
| Total new forest crossed (miles)* | 11.2 | 11.2 |
| Upland forest cleared (acres) | 373 | 417 |
| Wetland forest cleared (acres) | 76 | 87 |
| Total forest cleared (acres) | 449 | 504 |

* No corridor currently exists of any kind.

Forest fragmentation

An analysis of the forest fragmentation potential for the Owen 3 Route was completed as described in Chapter 6. Only one forest block greater than 1,000 acres in size is present along the Owen 3 Route due to the prevalence of agricultural land use throughout much of this portion of the project area. The route would create a new corridor through this block, which is located in a planned expansion area for the Nine-Mile Forest (segments 14b and 14a).

A similar analysis was conducted for the final EIS using a forest block size of 200 to 1,000 acres. In the more open landscape encountered along this route, a wooded block of 200 acres or more can provide a haven for many less common wildlife and plant species. Fragmentation of these areas could have a major effect on the potential for these species to thrive and reproduce in this area of the state. At least 16 forest blocks of 200 acres have been identified on the Owen 3 Route.²⁴² Three of these blocks would be fragmented by the creation of a new corridor. In the other 13 blocks the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Owen 3 Route could pass through up to one mile of forest owned by forest products industries (industrial forest). This industrial forest is located in Rusk and Taylor Counties.

County forest lands

Marathon County Forest

Near the Weston Power Plant the route crosses the Nine-Mile unit of the Marathon County Forest. This forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Games are conducted in the Forest. Trail crossings by the power line would diminish the visual appeal of the Forest to recreational users. Trails are concentrated in areas of the Forest north of Spring Brook Road. Segments 7a and 7b parallel Spring Brook Road and a petroleum pipeline and may share these corridors, reducing the incremental impacts. About 1.9 miles of the route would lie on county forest land. For over half this length, the new line would be double circuited with the existing WPS 345 kV line. Elsewhere, about 1.5 miles of the route, lying southwest of the Nine Mile Forest, are within the potential purchase zone for expansion of this county forest unit.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Owen 3 Route are described below.

The Owen 3 Route crosses the Chippewa River and the Flambeau River, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could

²⁴² These blocks are mutually exclusive of the 1,000+ acre blocks and thus have not been double counted for this analysis.

be avoided if construction equipment does not enter the rivers and if proper erosion control measures are implemented.

One location where bird strikes are a significant concern is the Three Lakes Wetland Mitigation Site east of Abbotsford. A 115 kV line on H-frame structures currently crosses the center of the site. Bird strikes are a concern with this existing line. Some line design modifications have been made to reduce the existing hazard. If the new 345 kV transmission line is built on this route, the existing 115 kV line would be moved south, to an area just south of the site boundary. It would be placed on a double circuit structure with the new 345 kV line. This modification would reduce the bird strike hazard at the site, but not entirely eliminate it, since birds flying to and from areas south of the site would still face a collision risk with the stacked conductors of the new line.

Bird strikes are also a concern where the line would span major rivers like the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use these areas and have been observed in several locations along the route. Major rivers also can serve as corridors for daily and migratory flights by many bird species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been observed in three different locations along the route (segments 1 and 242). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 9-14 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given, in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 9-14 Threatened and endangered species for the Owen 3 Route

| Scientific Name | Common Name | Status |
|---------------------------------|----------------------------------|--------|
| <i>Clemmys insculpta</i> | Wood turtle | THR |
| <i>Emydoidea blandingii</i> | Blanding's turtle | THR |
| <i>Cyclonaias tuberculata</i> | Purple wartyback mussel | END |
| <i>Plethobasus cyphus</i> | Bullhead mussel | END |
| <i>Ophiogomphus bowei</i> | Pygmy snaketail dragonfly | THR |
| <i>Ophiogomphus anomalus</i> | Extra-striped clubtail dragonfly | END |
| <i>Ophiogomphus susbebecha</i> | Saint Croix snaketail dragonfly | END |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | SC/FL |

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

Three parts of the route are in commercial/industrial zones. The major part (0.8 mile) is at Abbotsford. Another section with this zoning designation is the Weston Power Plant site. The last is west of Sheldon in Rusk County. Conservancy/recreational is the zoning designation along 1.9 miles of the route. Agricultural is by far the most common land use zoning designation along the proposed route with about 52 miles crossing land zoned for agriculture. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity areas of use (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 4.5 miles of the route passes through areas zoned for residential use. About 1.6 miles of this lie along existing transmission line corridors. The majority of the residentially-zoned land is near the southern end of the route, in the town of Mosinee, Marathon County. The other residentially zoned area is a 0.7-mile section of the route at Abbotsford. The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The properties crossed are listed in the order they are crossed, north to south. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forest lands are discussed in more detail under the forest impacts section of this chapter.

- | | |
|--------------------------------------|---------------------|
| • DNR | Segment 303 |
| • Town of Grant | Segment 242' |
| • United States of America | Segment 242' |
| • DNR | Segment 207 |
| • Marathon County Forest | Segments 7a, 1b, 1a |
| • Rib Mountain Metro Sewage District | Segment 1a |

Agriculture

The route crosses a total of about 63 miles of agricultural land (53 percent of the total length of the route). Agricultural activity is less common at the beginning of the route in parts of Sawyer and Rusk Counties and at the termination point in Marathon County near the Weston Power Plant. These locations are heavily forested. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. In Clark, Taylor, Chippewa, and Rusk Counties, the route would affect agricultural land used for dairy, beef, and Christmas tree production as well as smaller amounts of forested land.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Owen 3 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, but the incremental visual impact would vary depending on whether any facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller than existing poles, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Owen 3 Route would be in those areas that do not have existing facility corridors. About 36 percent of the length of the route, 42.8 miles, does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW where none currently exists. Most of this is located on farmland in Clark and Marathon Counties.

An increased level of visual impact would occur on the portions of the Owen 3 Route that are proposed to be located where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical facilities are present. Because the pipeline companies may not allow transmission line structures on or overhanging the existing pipeline ROW, it would probably be necessary to widen the cleared corridor by 108 to 132 feet. The new, wider corridor would contain a very visible transmission line. About 29 percent, or 34.1 miles, of the proposed Owen 3 Route is located in a corridor with only a pipeline. This corridor is located between Exeland and Owen. Another 2.2 miles of the proposed route lie adjacent to a 69 kV transmission line and a pipeline west of Ladysmith. The new line would be double circuited with this existing line, on poles that would be 125 to 135 feet tall. Another 0.8 mile of the route near Weston would be adjacent to a road and a pipeline.

About 1.5 percent, or 1.9 miles, of the Owen 3 Route is proposed to be located along railroad corridors. Because the railroad company may not allow transmission line structures on or overhanging the existing railroad ROW, the existing corridors would be widened by 98 to 122 feet. Railroad facilities are generally more visible than a pipeline corridor but the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of corridor sharing with a railroad would be less than along existing pipeline corridors, but more than when the new line was double circuited with or built parallel to existing transmission line. About two miles of the route parallel a railroad corridor between Gilman and Lublin in Taylor County.

About 0.4 percent, or 0.5 mile, of the Owen 3 Route is proposed to be located along corridors that already have an existing road. This segment is east of Abbotsford, at the Three Lakes Wetland Mitigation Site in Marathon County. The transmission line ROW could partially overlap the road ROW at this point, reducing the need for new ROW to 91 additional feet. Road corridors have visual characteristics similar to rail corridors--the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of siting the line next to a road would be less than along an existing pipeline corridor, but more than on existing transmission line corridors.

The remaining 32 percent, about 37.5 miles, of the Owen 3 Route would be located where there already are electric transmission lines. About three miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole double circuit structures that would be 125 to 135 feet tall. Another transmission line corridor that would be used is currently occupied by an NSP 115 kV line on H-frame structures that are about 65 feet tall. This corridor runs east-west south of Owen and Withee. The proposed new transmission line would be double circuited with this existing line on single pole structures for the westernmost 2.3 miles (the part west of the Black River) of this shared corridor. These double circuit single pole structures would be 125 to 135 feet tall.

East of the Black River, an additional 1.2 miles of the existing line could also be double circuited, or the new line could be built next to the existing line on H-frame or single pole structures. If the new line is built parallel to the existing lines, the ROW would be expanded by

100 to 120 feet, and the second set of poles would be 85 to 105 feet tall with corner structures 100 to 130 feet tall. The existing line extends further east, but will soon be removed from this corridor as approved by the Commission (for the Baldwin-Marathon City Project). The proposed line on the Owen 3 Route would reuse about 11 miles of this vacated corridor. An additional 30 to 60 feet of new ROW would be needed to accommodate either single pole or H-frame structures 85 to 105 feet tall with corner structures 100 to 130 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the Lakehead petroleum pipeline near Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, however, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. North of Ladysmith and near the Weston Power Plant the landscape is heavily forested. Elsewhere the landscape is more open, with farmland predominating. In general, the southern part of the route is more densely populated than the rest of the route.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Owen 3 Route crosses the Chippewa and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. The Rusk County Trails Association maintains a system of bike, ski, and hiking trails on the part of the property located north and west of the Flambeau River. These trails also are the site of bicycle races that are elements of the Badger State Games. Visual impacts to the trail system are reduced by following the existing cleared pipeline corridor and by avoiding the largest concentrations of trails. A primitive road leads down to the river where the Lakehead pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2, 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest along up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing

were moved about a quarter mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

The Ice Age NST is proposed to extend through Taylor County, crossing the Owen 3 Route in the vicinity of segment 229. An exact location for the future trail has not been determined, but it is anticipated that it would cross the proposed power line route between Gilman and Lublin. The area contains much open land, and the power line would be highly visible from the trail, detracting from the aesthetic experience of trail users.

The Three Lakes Wetland Mitigation Site, located adjacent to segment 205, east of Abbotsford, is a wetland restored by the DOT to compensate for wetlands destroyed by highway construction projects. An existing 115 kV line on H-frame structures currently passes through the site. If the transmission line were built on this route, this line would be relocated and double circuited with the new line south of the site. A wildlife viewing area is currently located along the south edge of the site. The existing line is clearly visible from this viewing area. Visual impacts to wildlife watchers using this viewing area would be reduced by the relocation of this line.

The Nine-Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segments 7a and 7b parallel Spring Brook Road and a petroleum pipeline and may share these corridors, reducing the incremental visual impacts, but making the impacts visible to motorists.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetic and property values, the number of structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of structures within 300 feet on the Owen 3 Route with the number on other Owen Routes.

Table 9-15 Number of facilities within 300 feet of the Owen 3 Route

| Facility Type | Double Circuit | Parallel Construction |
|---|----------------|-----------------------|
| Homes 0-50 feet | 1 | 1 |
| Homes 50-100 feet | 3 | 3 |
| Homes 100-150 feet | 10 | 10 |
| Homes 150-300 feet | 26 | 26 |
| Total Homes | 40 | 40 |
| Commercial/industrial/office 0-50 feet | 1 | 0 |
| Commercial/industrial/office 50-100 feet | 0 | 0 |
| Commercial/industrial/office 100-150 feet | 1 | 1 |
| Commercial/industrial/office 150-300 feet | 4 | 5 |
| Total Commercial/Industrial/Office | 6 | 6 |
| Agricultural outbuilding 0-50 feet | 1 | 1 |
| Agricultural outbuilding 50-100 feet | 1 | 1 |
| Agricultural outbuilding 100-150 feet | 4 | 3 |
| Agricultural outbuilding 150-300 feet | 21 | 22 |
| Total Agricultural Outbuilding | 27 | 27 |
| Total Facilities | 73 | 73 |

¹ There are no apartments, schools, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

Historical and archeological sites

Two archeological sites listed with the SHSW have been identified near the proposed ROW. They include areas of stone fragment scatterings of unknown prehistoric origin south of Ladysmith (segment 242'). The SHSW would require the sites to be field surveyed by a qualified archeologist if the project is approved and if the Owen 3 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Owen 4 Route

Detailed description

The Owen 4 Route is approximately 118 miles long. Figures 9-10 to 9-12 show the route from north to south. The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line. The route follows the transmission line south for about three miles. It extends southeast to follow the Lakehead petroleum pipeline corridor for most of the next 38 miles between Exeland and Gilman, in Taylor County. The route crosses Big Weirgor Creek, Buff Creek, STH 42, the Chippewa River, CTH J, the Little Thornapple River, CTH A, the Thornapple River, Twin Creek, and USH 8 before crossing the Flambeau River southwest of

Ladysmith. Where the route crosses USH 8, the line would be double circuited with an NSP 69 kV transmission line for about two miles. South of the Flambeau River, the route crosses STH 27, Deer Tail Creek, CTH I, Main Creek, and CTH G. Near Sheldon, it crosses CTH VV (both west and south of the community), the Little Jump River, STH 194, and the Jump River. The route also passes near Bass Lake in the town of Thornapple, and Conrath. Between the western Taylor County line and Gilman the route crosses the Fisher River, CTH M, CTH H, and Elder Creek. The route leaves the pipeline to detour around Gilman, crossing STH 64, the Yellow River, and CTH B.

South of Gilman the route follows the Wisconsin Central Railroad for about two miles before rejoining the pipeline corridor near Lublin. The route leaves the pipeline corridor near the Clark County line and proceeds cross-country, due south, for approximately seven miles as it detours around the communities of Owen and Withee, until it joins an existing NSP 115 kV transmission line, about four miles southwest of Withee. CTH X and STH 29/73 are crossed by this route section. The route turns eastward and follows the NSP 115 kV transmission line ROW east for about 17 miles, passing about two miles south of Owen and Withee, until reaching a point just south of Abbotsford where the existing line changes to WPSC ownership. The new line could be double circuited with five miles of the westernmost portion of NSP's existing line. The NSP line has recently been rebuilt to 161 kV specifications and the portion east of Owen has been re-routed. Consequently, the portion of the NSP ROW east of Owen will be vacated by the time of construction of the proposed Arrowhead-Weston line and could be used for the new 345 kV line. CTH O, the Black River, STH 73, the Popple River, CTH D, the South Fork Popple River, CTH P, CTH E, and Dill Creek would be crossed in Clark County.

The route continues east into Marathon County along the existing WPSC 115 kV transmission line for about 14 miles. The new line could be built as a double circuit line with the existing line, which has been constructed for 161 kV but is operated at 115 kV. Where the existing WPSC line angles northeast (about four miles west of Edgar), the route continues due east for another 1.5 miles. A quarter mile east of CTH M the route turns southeast and continues for four miles, crossing CTH N. South of Edgar, the route turns, proceeding east about three miles, crossing CTH H, and then turns and proceeds southeast and south for four miles, crossing CTH P.

At this point the route heads east until it meets an existing WPSC 345 kV transmission line. The route crosses CTH S, Burns Creek, STH 107, Freeman Creek, Hog Creek, CTH O, CTH B, and Roberts Creek. Where the route meets the WPSC line at CTH KK, it would double circuit with the existing line and follow it to its terminus at the Weston Substation, extending northeast about 1.5 miles, and then heading east for approximately 1.5 miles, crossing CTH KK (three times), Fourmile Creek, Black Creek, and the Wisconsin River.

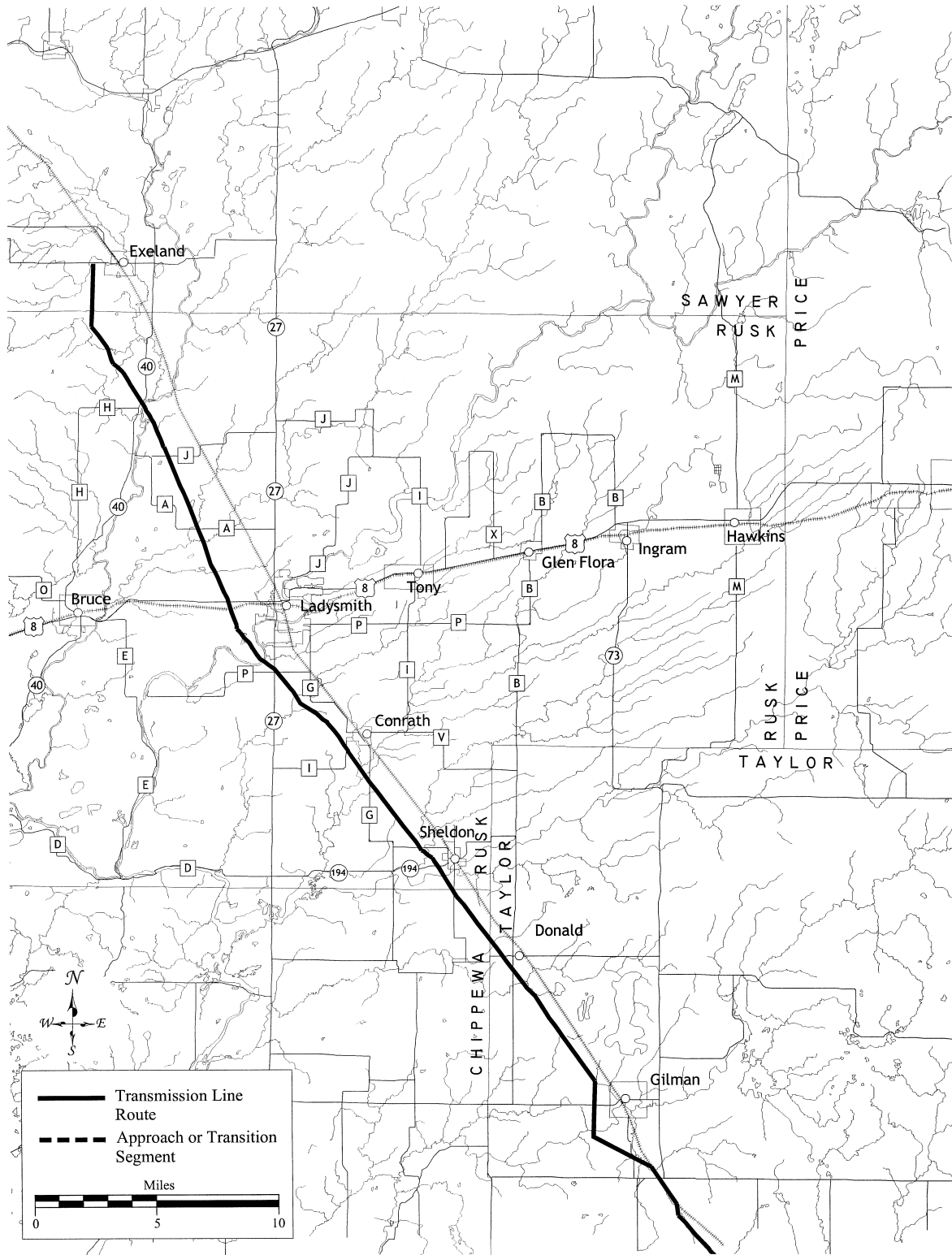
Figure 9-10 Owen 4 Route (1 of 3)

Figure 9-11 Owen 4 Route (2 of 3)

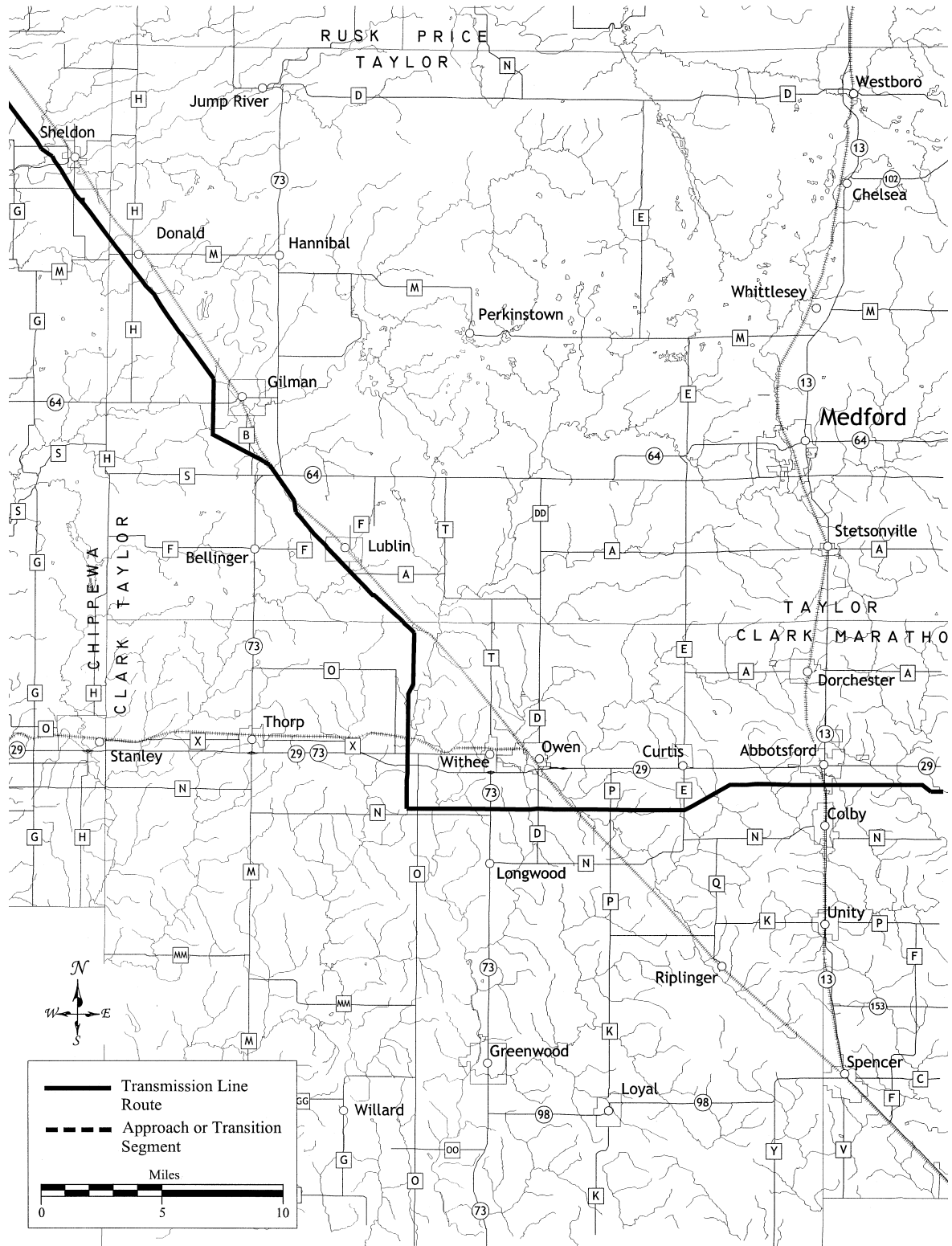
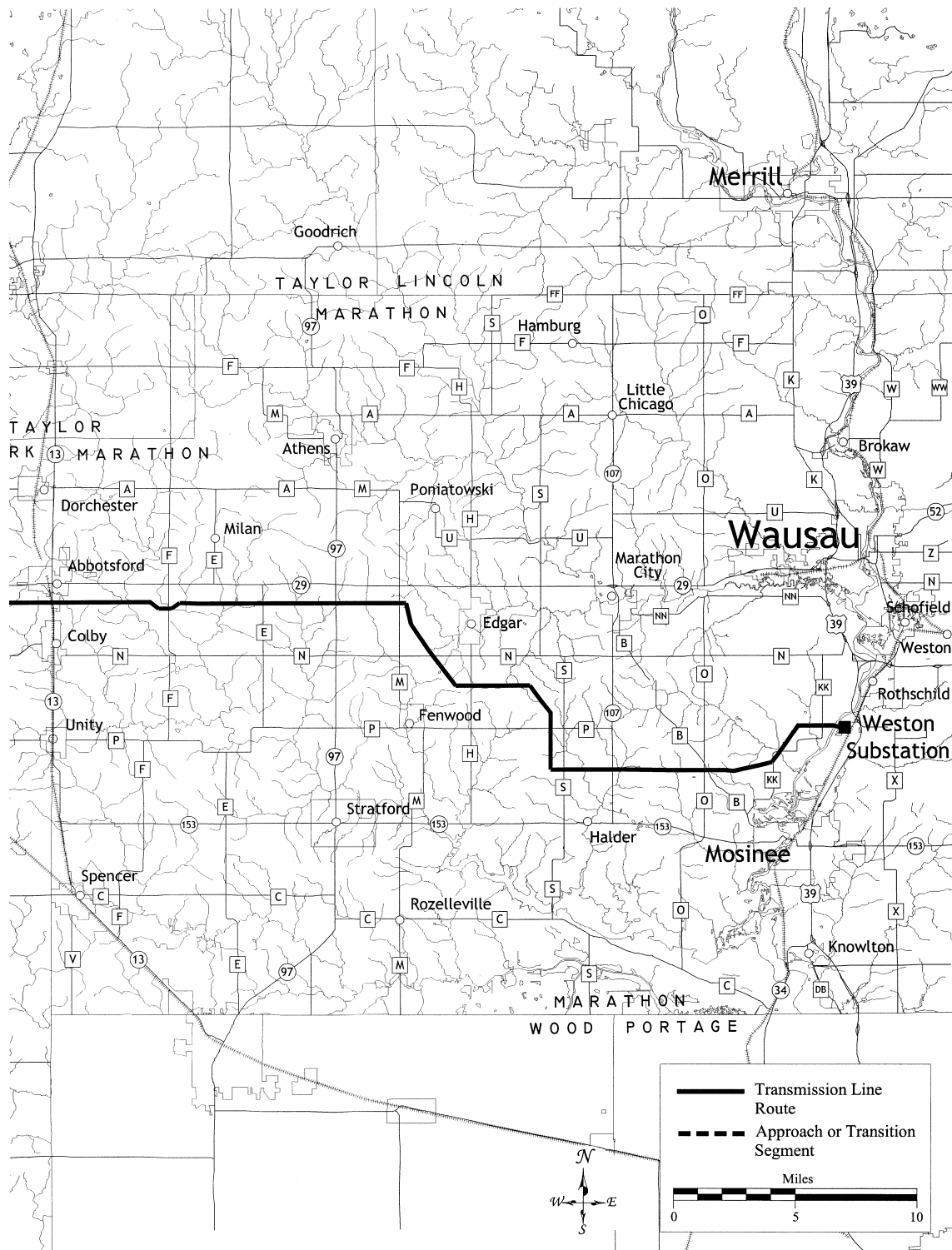


Figure 9-12 Owen 4 Route (3 of 3)

Natural resources

Lakes

The lakes affected by this route are the same as for the Owen 2 Route.

Rivers and streams

There are 36 river/stream crossings on the Owen 4 Route. Two of the crossings are over waterways that have been designated as either OERW and three of the crossings are over waterways classified as trout streams by the DNR. Twenty-one of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the transmission line, but they are not included in this analysis.

Table 9-16 indicates which streams along the Owen 4 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout is dependent on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the aquatic habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

Table 9-16 Rivers and streams on Owen 4 Route (from north to south)

| | | |
|----------------------------|-----------------------------|--------------------|
| Big Weirgor Creek * τ | Hay Creek ** | Burns Creek ** |
| Buff Creek ** | Hay Creek ** | Freeman Creek ** τ |
| Chippewa River ** | North Fork Eau Claire River | Unnamed stream ** |
| Little Thornapple River ** | Black River | Hog Creek ** |
| Thornapple River ** | Popple River | Unnamed stream ** |
| Unnamed stream ** | South Fork Popple River | Fourmile Creek |
| Twin Creek ** | Dill Creek | Black Creek ** τ |
| Flambeau River | Porky Creek ** | Wisconsin River ** |
| Deer Tail Creek ** | Big Eau Pleine River ** | |
| Little Jump River | Marsh Creek | |
| Jump River * ** | Randall Creek ** | |
| Unnamed stream | Hamann Creek | |
| Fisher River ** | Brod Creek | |
| Yellow River | Fenwood Creek | |

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed, or other streams or wetlands.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing.

The following section describes specific river and stream crossings on the Owen 4 Route and the potential impacts of constructing the line in these areas.

Chippewa River

Segment 303 crosses the Chippewa River about 700 feet north of an existing petroleum pipeline crossing. A farmstead is located along the river, an equal distance north of the proposed crossing. The riverbanks are wooded at this location. The transmission line would alter the visual setting at the crossing. Boaters would be the principal group impacted.

Flambeau River

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. A primitive road leads down to the river where the Lakehead petroleum pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest. This expansion would consist of up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing were moved about a quarter mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345-kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Other Outstanding and Exceptional Resource Waters (OERW)

The route crosses Big Weirgor Creek south of Exeland (segment 308) and the Jump River south of Sheldon (segment 242'). Each of these streams is an ERW.

Nationwide Rivers Inventory (NRI)

The Owen 4 route would cross four river segments listed in the NRI. They are the Chippewa River (segment 303), the Thornapple River (segment 242'), the Jump River (segment 239), and the Wisconsin River (segment 1a). The first three rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without

driving through a stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road.²⁴³ For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Wetlands

Construction of the transmission line has the potential to damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times. Heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture can change from day to day, depending on rainfall and soil type.

²⁴³ Use of private roads or logging road is possible, if arrangements can be made with the owner. Some incremental impact is likely to occur since many existing trails or roads are not adequate for large equipment or may not have been used for several years.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in the wetlands. The excavation and heavy equipment use required in erecting a structure would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetlands, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW would require the clearing of brush or timber over a distance of a mile or more, rendering such access impractical. A wetland over 1,000 feet in width would necessarily require driving equipment in the wetland, due to the need to place one or more structures.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Owen 4 Route would cross many wetlands as it passes from Exeland to Weston. The majority of wetlands is in the forested or shrub/scrub categories. The emergent type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 28 wetlands are greater than 1,000 feet wide at the point where the Owen 4 Route crosses them and would require one or more structures to be placed within them.²⁴⁴ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 106 wetlands on the Owen 4 Route would be at risk of being driven through by construction equipment.

²⁴⁴ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structures represents a “best case scenario.”

In general, wetlands are more common and less accessible between Exeland and Gilman than between Gilman and Weston. Segments 242, 237, and 11 cross a large number of wetlands. The relatively high road density in Marathon, Clark and southern Taylor Counties provides improved ROW access opportunities, reducing the probability of wetlands impacts. More than half the route follows existing facility corridors--mostly pipeline and electric transmission line ROWs. The incremental wetland impacts along these portions of the route may be reduced if the existing facilities have already degraded wetlands along the ROW.

Sensitive wetland types

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Owen 4 Route does not cross any tamarack/spruce bogs, but it does pass through two ericaceous bogs for a total crossing distance of 2,500 feet. Segment 242' has a 2,000-foot crossing of this type of bog, requiring that at least one transmission structure be placed in the wetland. The segment is adjacent to a petroleum pipeline. The other bog is along segment 310, where there is an existing transmission line.

High quality wetland resources

Two wetland (forested and non-forested) areas on the Owen 4 Route are associated with OERW or trout streams.

- Forested wetlands associated with Freeman Creek, a trout stream (segment 11, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 9-17 Wetland resources affected by the Owen 1 Route

| | Length of Forested Wetland Crossed (miles) | Length of Non-forested Wetland Crossed (miles) | Total Length of Wetland Crossed (miles) | Total Area of Wetland Affected (acres) |
|----------------|--|--|---|--|
| Double circuit | 6.6 | 13.1 | 19.7 | 324 |
| Parallel | 6.7 | 13.4 | 20.1 | 330 |

Forests

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120- to 150-foot wide ROW would be opened through the forest; and in other areas,

incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120- to 150-foot-wide ROW through 12.2 miles of forest. If the new transmission line is built as a double circuit with the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROWs would require a total of 369 acres of ROW clearing in upland forest and 85 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 74 acres of cleared upland forest and 24 acres of cleared forested wetland.

If the new transmission line is built parallel to the existing transmission lines on this route, the new ROW plus the incremental widening along existing ROWs would require a total of 414 acres of ROW clearing in upland forest and 96 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 31 acres of cleared upland forest and 16 acres of cleared forested wetland.

Table 9-18 Forest impacts for the Owen 4 Route

| | Double Circuit | Parallel Construction |
|--|----------------|-----------------------|
| Total new forest crossed (miles)* | 12.2 | 12.2 |
| Upland forest cleared (acres) | 369 | 414 |
| Wetland forest cleared (acres) | 85 | 96 |
| Total forest cleared (acres) | 454 | 510 |

* No corridor currently exists of any kind.

Forest fragmentation

An analysis of the forest fragmentation potential for the Owen 4 Route was completed as described in Chapter 5. Only two forest blocks greater than 1,000 acres in size are present along the Owen 4 Route due to the prevalence of agricultural land use throughout much of this portion of the project area. The route would create a new corridor through these two blocks. One block is in a planned expansion area for the Burma Road Unit of the Marathon County Forest (segment 11). The other is near the Nine Mile Unit of the Marathon County Forest.

A similar analysis was conducted for the final EIS using a forest block size of 200 to 1,000 acres. In the more open landscape encountered along this route, a wooded block of 200 acres or more can provide a haven for many less common wildlife and plant species. Fragmentation of these areas could have a major effect on the potential for these species to thrive and reproduce in this area of the state. At least 16 forest blocks 200 to 1,000 acres have been identified on the Owen 4 Route.²⁴⁵ Three of these blocks would be fragmented by the creation of a new corridor. In the other 13 blocks the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

²⁴⁵ These blocks are mutually exclusive of the 1,000+ acre blocks and thus have not been double counted for this analysis.

Industrial forests

The Owen 4 Route could pass through up to 1.75 miles of forest owned by forest products industries (industrial forest). This industrial forest is located in Rusk, Taylor, and Marathon Counties.

County forest land**Marathon County Forest**

The route passes about a 0.25 mile north of the Burma Road Unit of the Marathon County Forest. About 0.75 mile of segment 11 lies within the potential purchase zone for expansion of this county forest unit.

Near the Weston Substation, the route crosses the Nine Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. The route would avoid most trails in the forest. About 1.6 miles of the route cross county forestland. For two-thirds of this length, the new line would be double circuited with the existing WPSC 345 kV line.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Owen 4 Route are described below.

The Owen 4 Route crosses the Chippewa River and the Flambeau River, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment does not enter the rivers and if proper erosion control measures are implemented.

One location where bird strikes are a significant concern is the Three Lakes Wetland Mitigation Site east of Abbotsford. A 115 kV line on H-frame structures currently crosses the center of the site. Bird strikes are a concern with this existing line. Some line design modifications have been made to reduce the existing hazard. If the new 345 kV transmission line is built on this route, the existing 115 kV line would be moved south, to an area just south of the site boundary. It would be placed on a double circuit structure with the new 345 kV line. This modification would reduce the bird strike hazard at the site, but not entirely eliminate it, since birds flying to and from areas south of the site would still face a collision risk with the stacked conductors of the new line.

Bird strikes are also a concern where the line would span major rivers like the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use these areas and have been observed in several locations along the route. Major rivers also can serve as corridors for daily and migratory flights by many bird species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been observed in three different locations along the route (segments 1 and 242). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

The Blanding's turtle (*Emydoidea blandingii*), a state-threatened species, has been observed along segment 239 west of Sheldon. Avoiding this area during egg-laying and hatching periods could reduce possible impacts on the Blanding's turtle.

Table 9-19 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 9-19 Threatened and endangered species for the Owen 4 Route

| Scientific Name | Common Name | Status |
|---------------------------------|----------------------------------|--------|
| <i>Clemmys insculpta</i> | Wood turtle | THR |
| <i>Emydoidea blandingii</i> | Blanding's turtle | THR |
| <i>Cyclonaias tuberculata</i> | Purple wartyback mussel | END |
| <i>Plethobasus cyphus</i> | Bullhead mussel | END |
| <i>Ophiogomphus howei</i> | Pygmy snaketail dragonfly | THR |
| <i>Ophiogomphus anomalus</i> | Extra-striped clubtail dragonfly | END |
| <i>Ophiogomphus susbebecha</i> | Saint Croix snaketail dragonfly | END |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | SC/FL |

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

Three parts of the route are in commercial/industrial zones. The major part (0.8 mile) is at Abbotsford. Another section with this zoning designation is the Weston Power Plant site. The last is west of Sheldon in Rusk County. Conservancy/recreational is the zoning designation along 1.9 miles of the route. Agricultural is by far the most common land use zoning designation along the proposed route with about 58 miles crossing land zoned for agriculture. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity areas of use (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 4.1 miles of the route passes through areas zoned for residential use. About 2.6 miles of this lie along existing transmission line corridors. The majority of the residentially-zoned land is near the southern end of the route, in the town of Mosinee, Marathon County. The other residentially zoned area is a 0.7-mile section of the route at Abbotsford. The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The properties crossed are listed in the order they are crossed, north to south. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forest lands are discussed in more detail under the forest impacts section of this chapter.

- DNR Segment 303
- Town of Grant Segment 242'
- United States of America Segment 242'
- DNR Segment 207
- Town of Mosinee Segment 11
- Marathon High School Segment 11
- Marathon County Forest Segments 8b, 8a, 1b, 1a
- Rib Mountain Metro Sewage District Segment 1a

Agriculture

The route crosses a total of about 64 miles of agricultural land (54 percent of the total length of the route). Agricultural activity is less common at the beginning of the route in parts of Sawyer and Rusk Counties and at the termination point in Marathon County near the Weston Power Plant. These locations are heavily forested. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. In Clark, Taylor, Chippewa, and Rusk Counties, the route would affect agricultural land used for dairy, beef, and Christmas tree production as well as smaller amounts of forested land.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Owen 4 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, but the incremental visual impact would vary depending on whether any facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller than existing poles, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Owen 4 Route would be in those areas that do not have existing facility corridors. About 37 percent of the length of the route, 44.1 miles, does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW

where none currently exists. Most of this is located on farmland in Clark and Marathon Counties.

An increased level of visual impact would occur on the portions of the Owen 4 Route that are proposed to be located where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical facilities are present. Because the pipeline companies may not allow transmission line structures on or overhanging the existing pipeline ROW, it would be necessary to widen the cleared corridor by 108 to 132 feet. The new, wider corridor would contain a very visible transmission line. About 29 percent, or 33.8 miles, of the proposed Owen 4 Route is located in a corridor with a pipeline. This corridor is located between Exeland and Owen. Another 2.2 miles of the proposed route lie adjacent to a 69 kV transmission line and a pipeline west of Ladysmith. The new line would be double circuited with this existing line, on poles that would be 125 to 135 feet tall.

About 1.6 percent, or 1.9 miles, of the Owen 4 Route is proposed to be located along railroad corridors. Because the railroad company may not allow transmission line structures on or overhanging the existing railroad ROW, the existing corridors would probably be widened by 98 to 122 feet. Railroad facilities are generally more visible than a pipeline corridor but the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of corridor sharing with a railroad would be less than along existing pipeline corridors, but more than when the new line was double circuited with or built parallel to existing transmission line. About two miles of the route parallel a railroad corridor between Gilman and Lublin in Taylor County.

About 0.4 percent, or 0.5 mile, of the Owen 4 Route is proposed to be located along corridors that already have an existing road. This segment is east of Abbotsford, at the Three Lakes Wetland Mitigation Site in Marathon County. The transmission line ROW could partially overlap the road ROW at this point, reducing the need for new ROW to 91 additional feet. Road corridors have visual characteristics similar to rail corridors--the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of siting the line next to a road would be less than along an existing pipeline corridor, but more than on existing transmission line corridors.

The remaining 32 percent, about 38.1 miles, of the Owen 4 Route would be located where there already are electric transmission lines. About 3.6 miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole double circuit structures that would be 125 to 135 feet tall. Another transmission line corridor that would be used is currently occupied by an NSP 115 kV line on H-frame structures that are about 65 feet tall. This corridor runs east-west south of Owen and Withee. The proposed new transmission line would be double circuited with this existing line on single pole structures for the westernmost 2.3 miles (the part west of the Black River) of this shared corridor. These double circuit single pole structures would be 125 to 135 feet tall.

East of the Black River, an additional 1.2 miles of the existing line could also be double circuited, or the new line could be built next to the existing line on H-frame or single pole structures. If the new line is built parallel to the existing lines, the ROW would be expanded by 100 to 120 feet, and the second set of poles would be 85 to 105 feet tall with corner structures 100 to 130 feet tall. The existing line extends further east, but will soon be removed from this corridor as approved by the Commission (for the Baldwin-Marathon City Project). The proposed line on the Owen 4 Route would reuse about 11 miles of this vacated corridor. An additional 30 to 60 feet of new ROW would be needed to accommodate either single pole or H-frame structures 85 to 105 feet tall with corner structures 100 to 130 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the Lakehead petroleum pipeline near Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, however, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. North of Ladysmith and near the Weston Power Plant the landscape is heavily forested. Elsewhere the landscape is more open, with farmland predominating. In general, the southern part of the route is more densely populated than the rest of the route.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Owen 4 Route crosses the Chippewa and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

Property owned by the Flambeau Mining Company southwest of Ladysmith, along the Flambeau River is open to the public for recreational use. The Rusk County Trails Association maintains a system of bike, ski, and hiking trails on the part of the property located north and west of the Flambeau River. These trails also are the site of bicycle races that are elements of the Badger State Games. Visual impacts to the trail system are reduced by following the existing cleared pipeline corridor and by avoiding the largest concentrations of trails. A primitive road leads down to the river where the Lakehead pipeline crosses at a bend in the river. This spot is used by anglers and for informal picnicking. A riffle area is located just downstream of the pipeline crossing. (See Figure Vol. 2, 2-31.) A trail also follows the river bank in this area. Segment 242' crosses the river at this location. The DNR has plans to add a 500-foot strip of

land on either side of the river to the Flambeau River State Forest. This would be part of an expansion of the forest along up to nine miles of river frontage beginning at Ladysmith and extending downstream. Visual impacts could be reduced if the proposed power line crossing were moved about a quarter mile downstream. This would largely remove the power line from the view of this scenic river access point, although it would create a new corridor crossing the river.

The Ice Age NST is proposed to extend through Taylor County, crossing the Owen 4 Route in the vicinity of segment 229. An exact location for the future trail has not been determined, but it is anticipated that it would cross the proposed power line route between Gilman and Lublin. The area contains much open land, and the power line would be highly visible from the trail, detracting from the aesthetic experience of trail users.

The Three Lakes Wetland Mitigation Site, located adjacent to segment 205, east of Abbotsford, is a wetland restored by the DOT to compensate for wetlands destroyed by highway construction projects. An existing 115 kV line on H-frame structures currently passes through the site. If the transmission line were built on this route, this line would be relocated and double circuited with the new line south of the site. A wildlife viewing area is currently located along the south edge of the site. The existing line is clearly visible from this viewing area. Visual impacts to wildlife watchers using this viewing area would be reduced by the relocation of this line.

The Nine Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Visual impacts would be less serious because the new line would be double circuited with the existing 345 kV line.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetic, and property values, the number of structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of structures within 300 feet on the Owen 4 Route with the number on other Owen Routes.

Table 9-20 Number of facilities within 300 feet of the Owen 4 Route

| Facility Type | Double Circuit | Parallel Construction |
|---|----------------|-----------------------|
| Homes 0-50 feet | 1 | 1 |
| Homes 50-100 feet | 4 | 4 |
| Homes 100-150 feet | 10 | 10 |
| Homes 150-300 feet | 27 | 27 |
| Total Homes | 42 | 42 |
| Commercial/industrial/office 0-50 feet | 1 | 0 |
| Commercial/industrial/office 50-100 feet | 0 | 0 |
| Commercial/industrial/office 100-150 feet | 1 | 1 |
| Commercial/industrial/office 150-300 feet | 3 | 4 |
| Total Commercial/Industrial/Office | 5 | 5 |
| Agricultural outbuilding 0-50 feet | 1 | 1 |
| Agricultural outbuilding 50-100 feet | 2 | 2 |
| Agricultural outbuilding 100-150 feet | 4 | 3 |
| Agricultural outbuilding 150-300 feet | 21 | 22 |
| Total Agricultural Outbuilding | 28 | 28 |
| Total Facilities | 75 | 75 |

There are no apartments, schools, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

Historical and archeological sites

Two archeological sites listed with the SHSW have been identified near the proposed ROW. They include areas of stone fragment scatterings of unknown prehistoric origin south of Ladysmith (segment 242'). The SHSW would require the sites to be field surveyed by a qualified archeologist if the project is approved and if the Owen 4 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Unused segments

Some of the segments included in the application for the proposed project are not part of the four Owen Sector routes. Several of these segments provide viable alternatives to one or more of the route segments, while others provide options for connecting one route with another within a sector or between sectors. Alternatively, some of the unused segments are no longer under consideration because they provide no tangible benefits for reducing environmental impacts, costs, or increasing reliability. Some of the unused segments that lie within the Owen Sector are described below.

Segment 224

This segment provides a connection between segments 225 and 223, near the Taylor-Clark County line. Segment 225 follows a railroad corridor. The Owen 2 and 3 Routes follow a pipeline corridor (segment 226) southeast of Lublin. About two-thirds of this 0.5 mile cross-country segment is non-forested wetland. Use of the segment would require placing a corner structure in a wetland.

Segment 238

This segment provides a connection between segments 243 and 237, at the Rusk-Chippewa County line. The 1.3-mile segment follows an existing NSP 115 kV line for most of its length as it passes east of a Lakehead Pipeline pumping station and an NSP substation, crossing mostly farmland and some forest.